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LOGIC,

OR

THE ART OF THINKING:

BEING

THE PORT-ROYAL LOGIC.

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TRANSLATED

FROM THE FRENCH, WITH AN INTRODUCTION,

BY

THOMAS SPENCER BAYNES.

ROYAL ASIATIC SOCIETY OF THE BOMBAY BRANCH
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TRANSLATOR'S PREFACE.

No apology is needful for the Port-Royal Logic. The Translation of a work of such high repute and sterling excellence, if at all faithful, must needs be useful. It is especially likely to be so, now that a revival of interest in logical studies has commenced, since, from its freshness of thought, and variety of illustration, it is better adapted to meet the wants of inquirers, and foster the awakened interest, than most other works on the subject.

It will be right, however, to say a few words in relation to the circumstances under which the present translation is published. It was begun somewhat more than a year ago, but wholly laid aside soon after its commencement, and only hastily resumed within the last few weeks, in order that it might be carried through the press in time for college use during the present winter, so that the whole has been printed, and more than a third part translated, since the commencement of the session. In consequence of this haste, it appears in a much more imperfect form than I could have wished. I have been unable, for instance, to add illustrative notes, which the work in

many places requires, and, throughout, well deserves. The materials for these had been in great part collected, but it was impossible to prepare them in time for the present edition. It has suffered, too, I cannot but fear, in other ways, from the haste with which it has been prepared. After all, however, the book must be judged of by what it is, not by what it was intended to be; and, even in its present form, I hope it may be found useful to the students of Logic.

In reference to the translation itself, I may say, that the only virtues which have been aimed at are those of clearness and correctness. I dare not say that even these have always been attained; but anything like elegance has certainly never been attempted. The translation is not designed for accomplished logicians. All who have paid much attention to Logic will be already quite familiar with it in the original. It was undertaken mainly for the benefit of students, and is designed for academical use; and, with this end in view, the virtues of plainness and faithfulness are of the first account. There will be found here and there some expressions which are quaint, and almost antiquated. These, I have neither, on the one hand, affected, nor, on the other, superstitiously avoided, when they seemed to offer a plainer and more pointed rendering of the original. The literalities, too, are sometimes awkward—such as "justness of mind," (*justesse de l'esprit*)—but they will generally, it is hoped, be found significant; and if a little strangeness in the expression should tend to fix attention on the thought, they will do good rather than harm.

It is necessary, also, to say something about the use of

italics throughout the book. This has not always been consistent. It was intended that the definitions and more important illustrations should be thus distinguished, in order that the attention of students might be called at once to the more important parts, and that these being thus printed in a different character might form a kind of abstract of the book. This, though carried out to a considerable extent, has not, however, been always attended to. At first, too, the old-fashioned plan of printing the quotations in italics was adopted, but these were found too numerous, and too unimportant, to merit this distinction, and the practice was accordingly subsequently abandoned.

In conclusion, I have only to return my best thanks to Sir William Hamilton, to whose kind encouragement this translation is mainly due, and to whom I am indebted in so many ways. No expression, indeed, of my obligations to Sir William Hamilton can be too full; and the only regret I feel in making this acknowledgment is, that his name should be associated with a work so exceedingly imperfect.

THOS. S. BAYNES.

EDINBURGH, 1, ALVA STREET,
January, 1850.

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INTRODUCTION BY THE TRANSLATOR.

An introduction to the Port-Royal Logic, if full and complete, ought to contain a life of Antony Arnauld, its author. There are perhaps few men, equally celebrated, of whom so little is generally known, as there are certainly very few indeed whose lives are so well worthy of being written. A biography of Arnauld would, however, occupy more space than can be devoted to the present introduction. Instead, therefore, of giving a life of its author, we shall attempt a brief sketch of the character and history of the work itself.

Before doing so, however, it may be well to glance for a moment at the state of philosophy in general, and of Logic in particular, at the time of its first appearance. This was pre-eminently the period of inquiry and discovery—the age of Galileo and Torricelli—of Leibnitz and Descartes. The experiments of the two former had opened a new world of discovery in science; while the new direction given to mental inquiry by the two latter, by fixing its point of departure in consciousness, had opened a world scarcely less new, or less promising, for philosophy. The influence of the writings of Descartes, in particular, had been very great—an influence arising, however, more from the spirit than from the letter of his teaching. The value, indeed, of his contribution to philosophy, must be estimated in this relation,—not so much by what he did himself, as by what he

caused others to do—not so much by the doctrines which he taught, as by the spirit which he inspired. And in this respect it would be perhaps difficult to estimate, or rather to over-estimate, the amount of good which he effected. The secret of his influence lay in the *living* character of his writings. His pages were not enriched by learned reference, and rarely, indeed, contained allusions to current doctrines; but they were instinct with active thought—they were the faithful reflex of his own mind. He accepted no heritage of philosophic faith for himself—he delivered no traditions to others: and if he has left behind him some romances, they are not legends gathered from elder philosophies, but the creations of his own mind. It was this intensely personal character of his writings—the evidence they bore of his own severe self-questionings, and of his faithful replies, that gave them their power. For the life which they thus breathed, though not glowing or enthusiastic, was yet strong and real, and the very touch of vitality is life-giving. Life, too, was what philosophy then especially needed, for it had well-nigh lost itself amidst empty forms and barren abstractions.

It would seem, indeed, as though it required to be periodically brought down from the clouds, or from abstractions equally distant and inaccessible. Such a period had certainly then arrived, and Descartes appeared to recall philosophy from the pursuit of what it could never attain, to the humbler, yet wiser, task of investigating what lay within its reach. This he did both overtly and implicitly. *Overtly*, by rejecting the vain search after absolute principles, and the vain delusion of having found them; by founding philosophy on the sure basis of facts, the facts of inward experience, and restricting its sphere to the domain of consciousness; *implicitly*, by revealing the processes of his own mind in its search after truth. You saw him ever actively at work; and it was a fine introduction to the

true "Art of Thinking," to be admitted to contemplate the workings of such a mind—to see it wrestling with doubt, and overthrowing it—gradually passing on, step by step, through scepticism, and difficulty, and indecision, until at length it arrived at certainty and truth.

The example of such thorough independence in philosophy was as new and strange as it was inspiring. Reason had long been subject to the yoke of authority; and though some noble efforts had been made against it before Descartes, these had not been thorough-going or sustained enough, to shake it off. Patricius had revolted from Aristotle in the interest of Plato; Ramus had done the same. Bruno and Campanella, it is true, had thrown off all authority, but they were at once too rash and too eccentric to destroy the influence of the church, or overthrow the power of the schools. It remained for Descartes successfully to vindicate the claims of reason. He fully emancipated it from the yoke of authority, and recalled (as we have said) philosophy to its true office—the investigation of the relative and knowable. The spirit of inquiry which had been already partially aroused was thus thoroughly awakened. Passive acquiescence gave way to active examination; reverence for tradition was overcome by the instinct of freedom; the power of authority was broken by the power of truth. Men awoke to the consciousness, that in matters belonging to reason they had a right to inquire, and could only thus be truly said to know. The value of opinions was estimated, not by the names they bore, but by the truth which they contained. Those who studied philosophy now passed from the stillness of the cloister to the bustle of the world; from exclusive converse with books to varied intercourse with men; from under the shadow of great names, and old opinions, to the light of reason, and the individual responsibility of thought. The vices of extreme speculation were

corrected by a constant and wholesome reference to the facts of experiment and observation. The severity of a self-consuming dialectic was tempered by a more varied range of study and a wider sphere of sympathy. Metaphysics and physics, philosophy and science, were pursued harmoniously together; and, as the natural result, there appeared a spirit of freedom, a love of truth, and a tone of health, in philosophical writings to which they had previously been strangers.

In none was this influence better seen than in the writings of the Port-Royalists. The spirit of an age which happily blended the life of inward reflection with the life of outward activity, and well balanced the hitherto conflicting claims of different sciences, was admirably represented in that small brotherhood of religious and learned men. Pascal, occupied with thoughts whose very presence was spiritual companionship, and whose high significance and power even he, divine as was his gift of speech, was unable to render into words, could yet leave the solemn sanctuary of his own meditations to mingle with the "Provincial Letters" in the active warfare of his day, and to contribute with steady hand, and watchful eye, his body of experiments to the physical science of his time. Nicole, fond of scholastic retirement, and occupied with moral delineations of exquisite subtilty and discrimination, could yet leave the quiet which he loved so well, to do earnest battle for his friends and for the truth. While Arnauld, great alike in word and deed, and almost equally at home upon all subjects, divided the marvellous energy of his mind between science and philosophy, religion and politics.

In Arnauld, indeed, are found singularly united many of the best virtues of his time. Love of truth and freedom, fearless intrepidity, stainless honour, and inflexible justice, are ever found in his writings. And if with these virtues there is sometimes blended a confidence which seems to

border on arrogance, and a vehemence and determination apparently allied to intolerance, this is not to be wondered at; it was the natural manifestation of his force of character and dialectic power, and the intolerance will be found, after all, more apparent than real. His life was throughout one of incessant warfare; yet few, it may be safely affirmed, have resisted so well the corrupting influence of continual controversy, and maintained to the last a spirit so catholic and just. Bowing to the authority of the church, yet confronting the thunders of the Vatican—rejecting the old philosophy, yet reproducing the truth which it contained—accepting the new, yet fearlessly discussing its dogmas with its founder, Descartes,—he vindicated incessantly the claims of reason and of faith, with an earnestness and impartiality which the love of truth alone could inspire. There is, indeed, scarcely any sight, even in that age of great men and great controversies, more inspiring, than that of Arnauld doing battle, single-handed, with all that was mightiest both in church and state,—banished by Louis the Fourteenth*—condemned by the Sorbonne and the Vatican—assailed incessantly with every kind of weapon, from a folio to a pamphlet, by the most numerous and influential parties both amongst Catholics and Protestants, yet maintaining his ground against them all—replying to every attack with an energy which was never wearied, a fertility of resource which was never exhausted, and a freshness of thought, and power of argument rarely equalled, and, perhaps, never excelled. It was the spirit of the old Breton chivalry revived under the garb of the modern ecclesiastic of France; and it glowed brightly to the close, for it is reported of him, that when grown old and grey in the warfare, and urged by the

* In effect, that is—Louis, instigated by Arnauld's enemies, issued an order for his arrest, which compelled him to leave France

gentler Nicole to give it up, and rest in peace, he promptly and energetically replied, "Rest! we shall rest through eternity."

Thus incessantly occupied, and writing upon almost all subjects, it might reasonably be imagined that he would not excel in any. The contrary, however, is the fact; and the marvel is, that amidst a life so harassed, and while engaged in theological controversies, the record of his share in which fills upwards of forty quarto volumes, he could yet find time for profound discussion with Descartes and Malebranche on the most abstract points of philosophy, and for the production of works which have become text-books in Grammar, Logic, and Mathematics. His merit as a philosopher must, indeed, ever rank high. Inferior to Descartes in originality and power, he excelled him in precision; and, while never rising to the elevation and spiritual beauty of Malebranche, he yet penetrated more profoundly into the foundations of philosophy, and investigated more thoroughly the relations of knowledge. His finer hypothesis of ideas, though not new to philosophy, was new to his day, and is probably due to his own acuteness; his "*New Elements of Geometry*" were the first attempt at a strictly philosophical arrangement of that branch of science; his "*General Grammar*" laid the foundation of all that has since been done in the philosophical exposition of language; his "*Logic*" * (of which we are immediately to speak) has never been superseded, and is at present in general use in the schools of France.

What, however, was the state of logic when the Port-Royal "Art of Thinking" first appeared? It was certainly not in a flourishing condition, and had, indeed, fallen into considerable neglect, if not into contempt. Descartes directed

* We attribute these works to him, because (with the exception of the "General Grammar") he certainly wrote by far the greater part of each of them.

his attention exclusively to method, and held logic, in general, to be of little use. It had presumptive evidence against it, since it was identified with a system now overthrown as useless;—in other words, it had descended from the schools, and was held responsible for much of their subtile trifling and sterile disquisition. Few were found disposed intelligently to examine its claims, and vindicate its worth. It has, indeed, been the misfortune of logic, from the first, to have less of original power and critical insight brought to bear upon it than any other branch of mental science. Looking at its later history, we may say, that with the exception of a few men of really independent thought, such as Laurentius Valla and Ludovicus Vives, little intelligent criticism had been shown in the science since the time of Boethius. Every writer followed in the track of his predecessor, and all in the track of Aristotle. Assuming the books of the Organon to be the canonical books of logic, and the doctors of the schools their authoritative expositors, very few logical heresies have ever arisen; and the few sects who have in form revolted, have generally remained in essence faithful to the old traditions. The history of logic has thus been chequered with fewer revolutions than have marked the progress of any other branch of mental science. Better for it, probably, had these been more numerous, since, in relation to philosophy, they have generally been the signs of its vitality and the omens of its progress.

The last considerable era in the history of logic, before the appearance of the Port-Royal, was that which had been produced a hundred years before by the revolt of Ramus from Aristotle, and the publication of his "*Dialectica*." It was, however, an epoch of excitement and disputation, rather than of progress. Ramus, though an independent and noble-minded man, carried, nevertheless, into his philosophical discussions a spirit of personality so

intense, that he seemed, even when combating opinions which had been universally held for more than a thousand years, to be attacking men rather than doctrines. Thus his polemic against Aristotle took the form of a personal attack upon that philosopher, rather than of a serious attempt to overthrow the system of which he was the author. He endeavoured to show that the logical works usually attributed to him were not really his; he revived the old and obsolete slanders against his private character; and, in order to deprive him of the glory of having invented logic, he went back to the earliest records of history, and professed to have found the science long before his time, attributing its discovery even to Prometheus among the Greeks, and to Noah among the Hebrews.

What we have just said of sects in general is thus eminently true of the revolt of Ramus. It was more apparent than real—more in words than things—a change of outward arrangement rather than of inward essence. He disparaged the character of Aristotle, but effected no change in the fundamental principles of logic. The introduction or recal of a few verbal novelties, such as the term axiom for proposition—axiomatical for the part of logic which treats of judgments—dianoetical, for that which treats of reasoning—the rejection of the common introduction of Porphyry, and of the book of the categories, a rejection which had before been made by Vives—the adoption of the old division of logic into invention and judgment—the thorough-going application of the logical principle of division by dicothomy, derived from Plato—and a fresh arrangement of the different kinds of syllogisms,—comprise the majority of the changes effected by Ramus. Many of these, it will be seen (unimportant as they are), are not new, while none of them at all change the existing form of the science, either by the rejection of old elements or the introduction of new. The boldness of his attack upon

Aristotle was, however, of itself sufficient to determine controversy; while the energy of his personal character, his eventful life, and tragical death, conspired to fix attention on his writings, and to give them a wider popularity than they would otherwise have had. The excitement, however, thus produced (as was natural, since it was of personal rather than of scientific concernment), soon passed away; and as it had evolved no principle which could form the basis of a new development, logic speedily relapsed into its old state. It may be said, indeed, to have soon fallen into a worse state than that in which it had previously been; and the contrast thus presented between it and the other branches of philosophy, in which so much new life was manifest, could scarcely fail to bring it into discredit, if not into contempt. Everywhere else a spirit of inquiry and examination was displayed, which was full of promise. Philosophy was evidently casting aside the conditions of its scholastic existence in the interest of a higher and nobler development. Logic alone seemed incapable of advancement. It underwent no change, but still retained its old form, after its old life was dead. So long as scholasticism remained that form was entitled to respect; for there was a certain kind of quaint vitality about the old logic of the schools, which was not without its charm. In defect of the life with which we were familiar, it was pleasing to meet with "beings of reason," "logical quadrupeds," and disembodied universals,—to see the veritable tree of knowledge whereon genera and species grew, and from which they were gathered to meet the exigencies of mankind,—and to be introduced to those "extra-mundane and hyperphysical spaces, where chimeras feed and thrive to giants upon the dew of *second intentions*." But when the system with which all this was connected had passed away,—when it was no longer possible to discuss with grave simplicity whether twenty thousand angels could

dance together on the point of a needle, without mutually incommoding each other,—with other questions, equally important, touching the penetration of bodies and the traduction of souls,—when all this, we say, could no longer be, it was necessary that the science with which it was identified should assume a new form, should reflect the rising intelligence of the age, and share in the onward progress of philosophy. Instead of this, however, as we have said, it retrograded; it became but a feeble echo of the schools. The best works at most only said well, what had been better said times innumerable before; while with scarcely a single exception, all followed servilely in the track of the elder writers, stumbled where they stumbled, deviated where they deviated, only with less power of recovery and return. A hopeless rigidity seemed to have fallen on the science. The same divisions invariably appeared; the predicables and predicaments were ever at the threshold. The same illustrations always recur; resibility was still postulated as the unique and catholic characteristic of man; Sortes (Socrates) was the only individual in the world; the horse (excepting, perhaps, the differential varieties of centaur and hippogriff) the only animal in creation; and the tree of Porphyry the only vegetable product in nature.

It was not that the mere repetition of the same examples, until they had become stereotyped in the science, was in itself an evil. In many respects it was a good; for, in a formal science like logic, the more formal the examples—the less (that is), the attention is diverted from the form to the matter—the better. It was not, therefore, the mere repetition of the old forms that was so bad;—they might have sufficed, but that the life of intelligence and active thought had died out of them, and they had thus become in some sort the symbols of that decay. The infusion of new life into the science would thus naturally, and almost

necessarily, sweep away many of its existing accidental forms, in the interest of a newer and better manifestation of its essential principles. We have seen that these principles had been obscured by the blind statement and inane illustration which had been given of them. A fresh examination would exhibit them in a new form, and show, in their better statement and illustration, the beneficial results of an enlightened criticism.

This is exactly what the Port-Royal Logic accomplished. Its authors, while depreciating the science, as was the custom of their day, had nevertheless a clear knowledge of its true nature, and an appreciation of its true value. They brought to its examination the same spirit of inquiry, and power of analysis, which had been already employed with so much success in other branches of philosophy, and the science emerged from their hands in a new and better form. Much that had previously encumbered it was cast aside, while much that was at once scientifically valuable and new was added. Their treatise was characterised throughout, too, by a vigour of thought, a vivacity of criticism, a freshness and variety of illustration, an honesty and love of truth, and withal a human sympathy, which rendered it a work not only of specific scientific value, but of general interest and instruction. Logic was thus redeemed from the contempt into which it had fallen, and placed on a level with the advancing philosophy of the time.

So much in relation to the historical position and general character of the Port-Royal Logic. It will be right now to mention, more in detail, some of its special excellencies. We do not intend to give an analysis of the book, but only to mention one or two of the points in which it is favourably distinguished from other logics, and through which it may be said to have formed an epoch in the history of the science.

In the *first place*, looking at its general division, we may

say that the doctrine of *method* received, for the first time, the attention which its importance demands. It might, perhaps, be naturally expected that method would occupy an important place in a work which is, *par excellence*, the logic of the Cartesian philosophy; and which was not only written under the inspiration of the new exposition of method, but contains also direct contributions from the writings of Descartes himself.

We do not mean to say that no attention had been previously given to method in logical works; on the contrary, it had been gradually rising into value and importance. The "*Logica Vetus et Nova*," of Claubergius, published in 1654, eight years before the first edition of the Port-Royal, contains many passages of great excellence on method, in general and in special; but these are scattered throughout the work in different and widely separated places, so that we have nowhere a clear and connected view of the doctrine. The Logic of Gassendi (a posthumous work), published in 1658, contains a fourth part on method, which, though brief, is, like all the writings of that truly great and learned philosopher, admirably clear and good. I find, however, in an English work,* much earlier than either of these, a fourth part devoted to method, which contains a very good exposition of the doctrine in general, under its two divisions of analysis and synthesis (termed in it the contextive and retextive methods), as well as a correct appreciation of its more important relations in detail.

Still, however, notwithstanding these examples, and others which might be given, of partial appreciation, it may, I think, be said, that the true relation of the doctrine of method to logic, as the exposition of the means through which the elementary processes of *thinking* are conducted

* *Syntagma Logicum*, or the Divine Logic. By Thomas Granger, preacher of God's Word. London, 1620.

to the end they seek of *thinking well*, and through which, therefore, the elementary constituents of a science are built up into scientific completeness and perfection, was, for the first * time, rightly apprehended and expounded in the Port-Royal. The exposition which it gives of the true nature of *analysis* and *synthesis*, as being not two different methods, but the two parts of the same method, differing only in the point from which they depart, not in the path they traverse, as the road from a valley to a mountain differs from the road from the mountain to the valley; the discrimination of the different relations which they bear to knowledge,—the former being adapted for *seeking out truth*, the latter for *teaching it* when found; the doctrine of *definition*, its nature and importance,—the discrimination between the definition of *words* and *things*, the former as the exposition of the *idea*† we attach to a *word* being *arbitrary*, since we may call an idea by any name we like, provided we say so beforehand—the latter as the exposition of the *nature* of a *thing*, embodied in an idea, being *immutable*, since we cannot have any ideas we like of the nature of things; the doctrine of *division*, or the necessity of descending in a regular order from wholes to parts, from genera to species,—with the body of rules in relation to demonstration,—constitute together a most valuable contribution towards the exposition of the true science of

* I am almost tempted to recall this statement in favour of a small work (for the knowledge and the sight of which I am indebted to the kindness of Sir W. Hamilton) entitled—"*De Duplici Methodo libri duo, unicum P. Rami Methodum Refutantes*," by Edward Digby, Esq. (grandfather of Sir Kenelm Digby), a protestant gentleman of the 16th century, who wrote several philosophical tracts, which are highly spoken of. This tract on Method is remarkably clear and good. It was published in the year 1589.

† I adopt for the time the Cartesian language, and use the term *idea*. Its generic latitude, however, is restricted here, and generally in logic, to one of its species, viz. conceptions or notions.

method. Nor has its value been overlooked. Baron de Gerando specially praises the account of analysis and synthesis, and states that the whole doctrine of method, while Cartesian in substance, is yet more concisely, clearly, and completely expounded, than by Descartes himself;* while the Italian philosopher of the last century, Genovesi, says, after high praise of the logic in general, of this in particular,—"Sed ego sic censeo, quartam ejus artis partem optimæ esse frugis plenam omnique pretio superiorem."†

In the *second place*, the discrimination of ideas, in relation to their *quality* and *quantity*, is well worthy of remark. Under the former relation, the authors discriminate, in ideas, the qualities of *clearness* and *obscurity*, and come so near to the distinction afterwards taken by Leibnitz, which completes the analysis of ideas in this relation—the distinction, to wit, of *distinctness* and *indistinctness*, or confusion—that we can but marvel how they missed it. They even take it in terms, for the chapter which relates to this subject (Part I., Chap. IX.) is headed "on the clearness and distinctness of ideas, and their obscurity and confusion;" and after explaining what is meant by the clearness and confusion of an idea, and going on to the further discrimination of distinctness from indistinctness, to wit, that an idea is *clear* when we are able to distinguish it, as a *whole*, from others, but *distinct* when we are able also to distinguish the *parts* of which it is the sum: after, we say, approaching this discrimination, but before reaching it, they abandon the whole inquiry, and miss the glory of the discovery, by confounding together the qualities of clearness and distinctness, and the opposite qualities of obscurity and confusion. These discriminations, though of psychological rather than of logical concernment, are, however, of great

* *Historie Comparée des Syst. de Phil.* Paris, 1847, t. ii. p. 255.

† *Ant. Genuensis Elementa Artis Logico-Criticæ.* 1748. Prolog. § 30.

importance, and, indeed, essentially necessary, to the complete history of ideas.

A far more important discrimination, however, is that made under the second relation—the distinction, to wit, in ideas of the two quantities of *comprehension* and *extension* (Part I., Chap. VI.; Part II., Chap. XVII.). This distinction, though taken in general terms by Aristotle, and explicitly enounced with scientific precision by one, at least, of his Greek commentators, had escaped the marvellous acuteness of the schoolmen, and remained totally overlooked and forgotten till the publication of the Port-Royal Logic.* It was there, for the first time in modern philosophy, taken by Arnauld, and is, it cannot reasonably be doubted, due to his own acuteness, since there is no evidence or likelihood of his having been at all acquainted with the Greek commentators on Aristotle, from whom alone it could have been derived. From the Port-Royal it has passed into most of the subsequent works on logic, and, indeed, into some on grammar.† It was familiar to the

* For my knowledge of this I am indebted to Sir W. Hamilton. I do not go at all into any detail which might be given touching the history of this distinction, because I am unwilling, in any way, to anticipate the history and exposition of it, which we may hope to receive from the hands of that distinguished philosopher.

It is right, also, to state here generally, that this distinction, though thus taken by the Port-Royalists, and repeated in almost every logic since their time, has remained wholly barren in the science till quite a recent period; that its scientific significance has been, for the first time, fully investigated, appreciated, and applied throughout the whole science, by Sir William Hamilton; and that this thorough-going application of it gives a new development to logic, as practically valuable as it is scientifically complete. The exposition and application of this distinction, indeed, combined with the new doctrine of the predicate, will, I need scarcely say, to any conversant with logic, constitute a new, as it will be the *last*, revolution in its history—the era of its completion second only in importance to the era of its discovery.

† See Sicard's "*Elémens de Grammaire Générale, appliqués a la langue Française.*" Paris, 1801, t. 1, p. 99.

philosophical writers of this country at the beginning of the last century,* and expressly taken by most of the logical writers of the same period,† except the Oxford ones.‡ It seems, however, to have been almost forgotten till quite a recent period, when we see it is beginning to be again revived.§ It is a distinction of the widest application, and of the utmost importance in logic; and when the history of the science comes to be fully written, to have been the re-discoverer of it will constitute no slight claim to honourable mention therein.

In the *third place*, the *demonstration* given of the special rules of syllogisms, and the reduction of their *general laws* to a *single principle*, may be mentioned as worthy of note. These demonstrations evolve explicitly the principles (which are rarely formally given by logicians) on which the rules implicitly proceed, and thus well expound the doctrine touching the quantification of terms universally held by logicians. The reduction of the general laws of syllogism to the single principle (Part III., Chap. X.), *that*

* See, among others, Norris' "*Theory of the Ideal World.*" 1704, vol. ii., p. 178. Oldfield's "*Essay towards the Improvement of Reason.*" 1707, p. 70.

† See the "*Logica Elenctica*" of Tho. Govea, published at Dublin in the year 1683, p. 198. "*Logicæ Compendium*" (by Hutcheson), 1764, pp. 24, 25. "*Elements of Logick,*" by William Duncan (of Aberdeen), B. I. chap. iv., § 2, ¶ x. "*Logick; or an Essay on the Elements of Reasoning,*" &c., by Richard Kirwan, Esq., 1807, vol. i., p. 41.

‡ Aldrich is the only older Oxford writer, that I remember, who alludes to the Port-Royal at all, and he, most ungratefully (since he was much indebted to it), reviles it. For this, however, he has been properly censured, and justice done the Port-Royal Logic, by the last editor of the "Rudimenta," the Rev. H. L. Mansel, in the very able and learned notes with which he has enriched that work. See the notes to pages 85 and 86 of Mr Mansel's edition of Aldrich.

§ See "*An Outline of the necessary Laws of Thought,*" by the Rev. W. Thompson, M.A., London, 1849, p. 128; and the work just referred to. "*Artis Logicæ rudimenta, from the text of Aldrich, with Notes,*" by the Rev. H. L. Mansel, M.A., Oxford, 1849, p. 23.

one of the premises must contain the conclusion, and the other show that it does so, was an important simplification of syllogistic law, and evidently led the way for the further reduction effected by Buffier, who subsequently reduced all the rules of syllogism to the principle, "*that what is in the contained is in the containing.*"

There are several other parts of special excellence which might be signalised; but we shall only mention one more:—The catalogue given in the Twentieth Chapter of the Third Part of the various sources whence the vices of ordinary reasoning spring. This, it is true, belongs rather to modified than to pure logic—to the accidental conditions under which thought is realised by us, rather than to its essential necessities. As a contribution to this part of logic, however, it is of high value, since it is, if not an absolutely complete, at all events a full, enumeration of the sources, both external and internal, of those distracting influences which ordinarily interfere with the exercise of our thinking powers and pervert our judgments. It contains a fine analysis of the inward sophisms of interest, passion, prejudice, and self-love, through which we are continually deceived, and is characterised throughout by a tone of high moral thoughtfulness, and a truly humane, just, and noble spirit. Nor has its merit been overlooked. It is, indeed, a part which has excited general attention, and called forth universal praise. To select only two from the eulogiums which have been bestowed upon it—Baron de Gerando, speaking of the parts which especially merit praise, says, "Above all, that beautiful dissertation on the origin and effects of prejudices on the vices of reasoning in civil life. This dissertation, indeed, constitutes, of itself, a logic entirely new, almost sufficient, and far more important than all the apparatus of the peripatetic logic; and it must be recorded to the praise of the Port-Royal writers, that this is a part of their work which is peculiarly

their own." * While Mr Stewart, speaking of the original reflections scattered throughout the work, and regretting that these have not been more frequent, says:—"Among these discussions, the most valuable, in my opinion, is the Twentieth Chapter of the Third Part, which deserves the attention of every logical student as an important and instructive supplement to the enumerations of sophisms given by Aristotle." †

It may be well to say a word or two, in passing, about the *phraseology* employed in the Port-Royal. Almost every modern logic is written in the interest, or under the influence, of some particular philosophical system, the precise significance of whose technical language it is, therefore, necessary to know, in order to interpret it aright. The Port-Royal is, as we have said, Cartesian, and its terms, accordingly, are employed in their Cartesian signification. Thus the word *idea* is used in its Cartesian generality, or rather universality, to comprehend not only the products of our faculties of knowledge in particular, but also every modification of the mind in general. Thus, not only notions, images, and perceptions, but also feelings, volitions, and desires, are *ideas*. The particular kind of idea meant is generally indicated by the context, or by some significant epithet. Thus, as we have seen, *clear* ideas and *confused* ideas are spoken of. A *confused idea*, we may say, was almost always, in the earlier Cartesian writings, synonymous with *sensation*; it was an impression subjectively distinct or definite, but objectively obscure, a feeling rather than a knowledge—a sensation, in short, rather than a perception or notion. What we have said

* *Historia comp. de Syst. Philos.*, Tom. ii., pp. 50, 55. (Ed. 1800.) In the later edition published at Paris in 1847, this statement is somewhat modified, and much extended. Vol. ii., p. 253, 254. The passage is a beautiful one, but too long to be extracted.

† *Preliminary Dissertation to the Encyclopædia Britannica*, p. 81.

of the word idea, and the latitude in which it is taken, is equally true of the terms *thought* and *thinking;* and the antithesis of thought and extension common throughout the volume, is, it need scarcely be said, from Descartes, as the great criterion of certainty found in the clearness of an idea, which is given in the Fourth Part, is the Cartesian version of intuitive evidence.

Before leaving the consideration of the general character of the work, it may be right to make some allusion to the *theological discussions* which occur in two or three parts. It is somewhat unfortunate that these were introduced, as they add to the size of the work without being of any special logical relevancy or value. The introduction of such discussions was, however, a very common practice amongst logical writers. Milton reprehends it in the preface to his logic; and a later British writer frankly confesses that he had composed his logic in the interest of orthodoxy, deeming it a scandal to Protestants that they should with scarcely any exception (he excepts Derodon, of Geneva, by name), be dependent for their logic, as they were, on Catholics in general, and Jesuits in particular.

Logic, indeed, as a formal science, identified with no particular matter, equally applicable to all, yet dependent upon some for its illustration, is specially open to this kind of use, or abuse. The favourite study or profession of the writer would generally determine from what branch of science the examples should be taken; and the source from which they were thus selected often gave a distinctive epithet to the logic. Law and divinity have been specially favoured in this way. Thus, not to go beyond English works on logic, I have, in my own collection, one called "*The Lawyers' Logicke*," by Abraham Fraunce the poet, written while he was at Lincoln's Inn, and copiously illustrated by examples taken from legal authorities.* Another entitled

* This is a very able, curious, and learned book, and was published

"*The Divine Logike; serving especially for the use of divines in the practice of preaching, and for the further help of judicious hearers, and generally for all, by Thomas Granger, preacher of God's Word,*" which is a tolerably full Ramist logic, with theological examples: and a third, dedicated "*To the illustrious his Excellency Oliver Cromwell, Generalissimo of England, Ireland, and Scotland, Chancellor of Oxford, &c., and to the most renowned his General Council of Officers,*" * which contains about as much Scripture doctrine and history as is to be found in most catechisms.

This is, however, far from being the case with the Port-Royal. It is in general singularly free from this error, and stands, indeed, as we have said, favourably distinguished from other logical works, by the novelty and variety of its illustrations. The theological discussions which it contains are not wrought into the body of the work. They occur, for the most part, at the end of chapters; and many of them were added subsequently to the First Edition. The reason of their introduction is explained in general terms in the Preface to the Fifth Edition. Some parts in the previous editions had been laid hold of by the

in London, in the year 1588. Fraunce was a protegée of Sir Philip Sydney's, and was distinguished for the excellence of his English hexameters, which are among the earliest and most beautiful attempts in that kind of verse.

* "*The Art of Logick; or, the entire body of Logick in English,*" by Zachary Coke, of Gray's Inn, gent., London, 1654. This, too, like most of the older works, is of considerable scientific value. The dedication is very curious, as the following extract, which comprises the first two sentences, may serve to show:—"Sirs, the commodement of the publike in the appendages of an holy place, as it is the ακμη and just carue of Heroick Enterprizings, so *hærentes capiti multa cum laude coronæ*, the crown and apex of their glories, whom God shall honour to contribute thereunto, though but a grain or atome. Whereof (my Lords), by the conduct of providence and advantage of your incomparable magnanimities, after long exagitations and repugnance of affairs, we have gotten more than a (glad) glimpse, and by your unwearied zeals may shortly obtain the full prospect and fruition."

Calvinist ministers, and turned against the Catholics, and, as it should seem, against the Jansenists in particular. The Jansenists and the Calvinists, it should be explained, were, in obedience to the great law of all religious differences—that the nearer the doctrinal union, the wider the practical separation, too often the fiercer the practical hostility—were, we say, in conformity with this law, bitterly opposed, and waged incessant warfare on each other. Happily, without sympathising in the acrimony which their controversies often displayed, we may admire the piety of both parties, and that of Arnauld and Nicole was certainly as sincere and deep as that of Claude and Jurieu. As they were, however, nearly agreed in doctrine, it behoved them to signalise their separation by a more earnest contest about the points in which they differed. These were mainly touching the authority of the church, and the value of religious rites and observances. Thus, most of the discussions introduced into the present volume relate to the eucharist and the Catholic mystery of transubstantiation. Though evidently there introduced for a temporary purpose, and, as we have said, of no great logical value, they are, however, not without interest, and (as we need scarcely say), quite harmless. Happily the time for morbid dread at the statement of opinions opposed to our own, and unmanly effort at their perversion or concealment, is gone by. Protestantism, it may be presumed, is not the sickly thing that cannot bear the light, and is withered by the first breath of adverse doctrine. It built itself on strong reasons of old, and rests upon them still. We may say, therefore, fearlessly to all students: "Your bane and antidote are both before you;" the instrument of all reasoning is in your hands—through it overthrow the false, confirm the true.

We proceed to give a brief sketch of the *History* of the Port-Royal Logic.

Its origin is briefly detailed in the Advertisement to the First Edition. It arose out of the conversations in which Arnauld, Nicole, Sacy, Lancelot, and their friends were accustomed to engage, in the retirement of Port-Royal, on matters pertaining to philosophy, and was at first undertaken rather in jest than in earnest. We may be sure, however, that those who displayed a knowledge of the science, so minute, ready, and exact, had been diligent students of logic, or they could never have produced such a work within so short a time.*

The question of its *authorship* was, for a long time, a vexed one. It was attributed sometimes to Nicole alone, sometimes to Arnauld alone, and sometimes to both. The latter may be regarded as the true opinion, since it is now established that the volume is mainly the work of Arnauld, assisted by Nicole. Arnauld himself refers to it as his own † in his defence of his work, against Malebranche, on *True and False Ideas;* and also in a letter to Leibnitz, written in June in the year 1690. The most minutely authentic information, however, on the subject is contained in the manuscript of the younger Racine (who was himself a pupil at Port-Royal), quoted by Barbier in his Dictionary.‡ According to this manuscript the dissertations and the additions are by Nicole; the first parts are by Arnauld and Nicole together; the fourth by Arnauld alone.

The *first* edition was published at Paris in the year 1662, 12mo, under the title—"*La Logique ou l'Art de Penser; contenant outre les Regles communes, plusieurs observations nouvelles, propres à former le jugement.*"

* See *Logique d'Aristote, traduite* par J. B. Saint-Hilaire. Paris, 1844, Tom. i. (Preface, p. 137).

† I give this reference on the faith of the French editor of Arnauld's works, as I have been unable to verify it.

‡ *Dictionnaire des Ouvrages Anonymes et Pseudonymes.* Paris, 1806, Tom. i., p. 496.

The *second* edition, revised and augmented, was published in 1664, also at Paris.

The *third* appeared in 1668, and was, as the others, published at Paris, in 12mo.

The *fourth* was published at Paris in 1674. To this edition were added the 10th Chapter of the First Part; the 13th, 14th, and 15th of the Third; and the 1st of the Fourth; while considerable changes were made in Chapters 10 and 11 of the Second Part, and 19 and 20 of the Third, together with some additions.

The *fifth* edition was published at Paris in 1683. The additions made to this were, in the First Part, Chapters 4 and 15; and, in the Second, Chapters 1, 2, 12, and 14. Of these, the two first and the two last are taken in great part from Arnauld's Book on the "*Perpetuity of the Faith*;" while the others, to wit, the 1st and 2d of the Second Part, are taken almost verbatim from the "General Grammar," as is indicated at the beginning of the latter chapter. From the fifth, the subsequent editions, which have been numberless, are reprinted.

The *fourth* edition was reprinted in the year 1678, at Amsterdam, and included, amongst the Elzevir collection of works. A number of other editions from the same, and other presses, were also published at Amsterdam before the close of the century.

It was also very soon translated into Latin. How many different Latin translations there were I cannot positively say. *Two* there appear to have been, at least; one by Ackersdyk, published in 1666, and another, published at Halle, with a Preface by Buddeus, in 1704. I think there must have been another, as the only one which I have seen is an anonymous one published at Leyden, which, as early as the year 1702, had gone through ten editions. This was reprinted at London in 1667, and again in 1674.

All the Latin translations, indeed, appear to have gone through a great number of editions.

It was also translated into Spanish under the title—"*Arte de pensar O Logica admirable*," Madrid, 1759;* and into Italian, as we are informed by Genovesi.†

The logical treatises published in the Cartesian systems of Regis and Le Grand, are also, in substance, taken from the Port-Royal. That of Regis is confessedly only an abstract of it; while Le Grand reproduces verbally its more important parts. I am informed by Sir W. Hamilton that an abridgment of the Port-Royal was also published in Holland, under the title of "*Logica Contracta*," which went through many editions. These facts all tend to prove how widely its popularity extended. It very soon after its publication, indeed, acquired a European reputation, and became a classical work on the science.

There have been two previous translations into English, of which it is right to say something. The *first* was published in London as early, I think, as 1680, if not earlier. The only edition of this translation which I have seen is the fourth, which was published in 1702. The title-page states that it is "for public good translated into English by several hands;" and also that this edition is "corrected and amended." What it was before it received this improvement it would be difficult to say, since, with the benefit of these corrections and amendments, it is as bad as it well can be. The translators, indeed, seem not to have had any of the qualifications for their work which it behoved them to possess,—not certainly a knowledge of English, for they introduce connecting particles where there is nothing to connect, and conditional particles where

* *Allgemeine Encyclopädie der Wissenschafter und Künste*, von Ersch und Gruber. Leipsic, 1820 (art. Arnauld).

† *Elementa Artis Logico Criticæ*. 1748, prolog. § 38.

there is no condition,—not a knowledge of French, for they are led into error, and indeed into making nonsense of the original, by the accidental resemblances of words,—not a knowledge of the most elementary divisions of philosophy, for they say (in the preface), "let the reader disperse the application of this Art of Thinking into all the *actions* of his life if *knowledge* and *understanding* be his aim,"—not good taste, for they constantly use words which have the vice of offensiveness without the virtue of strength,—and, finally, not good faith, for they alter and reverse, at will, the meaning of the original without the slightest intimation of having done so. Thus, to take the shortest, but not the most flagrant, example, they translate "*le Pape qui est vicaire de Jésus-Christ*," by "*the Pope, who is Antichrist*;" and are, indeed, almost systematically perfidious when they are not unintelligible.

The other translation, first published in London in the year 1716, and again in 1723, is by Mr John Ozell, a gentleman of French extraction, who translated a number of works from the French, Italian, and Spanish languages, at the beginning of the last century. This is a much better one, in every respect, than the preceding, and is, on the whole, well done. The edition I have seen (1723) is, however, disfigured by an immense number of typographical errors. The translation, too, is incorrect in many parts, evidently, in some of the instances, through copying the previous one. It is also imperfect, since it has several omissions, often of sentences, sometimes of paragraphs, while, in more than one instance, the passages left out extend to pages.

While speaking of omissions, I may mention that one long passage (the account of the miracle at Hippo, from St Augustine, page 352), is left out in all the translations I have seen, both English and Latin. Of this, I need scarcely say, I cannot approve, and have, therefore, in-

serted it. My notions of the duties of a translator, in this respect, are stringent, and would not permit me to take from, add to, or alter the original in any way. If anything, therefore, has been left out of the present translation, it has been done so by accident, not by design,—if anything has been mis-rendered, it has been so through ignorance, not through bad faith. Whatever may be its defects, therefore (and to these I am keenly alive), it is more complete—I trust, also, that it will be found more correct —than the previous translations.

AUTHOR'S ADVERTISEMENT TO THE FIRST EDITION.

This small work had quite an accidental origin, and is due rather to a kind of sport than to any serious intention. A person of quality, entertaining a young nobleman, who, at an early age, displayed much depth and penetration of mind, happened to mention to him that he had, when himself young, met with a person who in fifteen days made him acquainted with the greater part of logic. The mention of this led another person who was present, and who held that science in no great esteem, to reply, sportively, that if Mr ——— would take the trouble he could confidently engage to make him acquainted, in four or five days, with all that was of any use in logic. This proposal, made at random, having afforded entertainment for a while, it was resolved to make the attempt; but as it was thought that the common logics were not sufficiently concise, or exact, it was determined that a brief abstract should be made from them for this purpose.

This is all that was contemplated in undertaking the work, and it was thought that it would not occupy more than a day. On engaging in it, however, so many new reflections presented themselves to the mind that it became necessary to write them down, in order to proceed. Thus, instead of a single day, four or five days were occupied in forming the body of this Logic, to which several additions have since been made. But although it thus embraced many more topics than it was at first designed to include,

the attempt, nevertheless, succeeded as had been promised, for the young nobleman having reduced the work to four tables, easily learnt them one a-day, without even having need of any one as instructor. It is certainly true, however, that we ought not to expect that others will learn it with the same ease, his mind being quite extraordinary in everything that depends on intelligence. Such is the accident that gave rise to this work. But whatever opinion may be held respecting it, the printing of it cannot, at least with justice, be condemned, since it was compulsory rather than voluntary. For since many persons had obtained manuscript copies, which, it is well known, cannot be made without many mistakes creeping in, and since it was understood that the printers were about to publish it, it was judged better to give it forth to the public in a correct and perfect form than to allow it to be printed from imperfect copies. In consequence of this, it became necessary to make various additions, which have increased its size about a third, it being thought that the views it contained ought to be extended further than they had been in the first essay. It is the design of the following Discourse to explain the end which the work proposes, and the reason of those subjects which are treated of in it.

AUTHOR'S ADVERTISEMENT TO THE FIFTH EDITION.

VARIOUS important additions have been made to this New Edition of the Logic. These were occasioned by the objections made by the Ministers to certain observations which it contained; it thus became necessary to explain and defend the parts which they had endeavoured to attack. It will be seen, by these explanations, that reason and faith perfectly harmonise, as being streams from the same source, and that we cannot go far from the one without departing also from the other. But although theological disputes have thus given rise to these additions, they are not less appropriate or less natural to logic; and they might have been made, even though there had never been any ministers in the world, who had attempted to obscure the truths of our faith with false subtileties.

DISCOURSE I.

IN WHICH THE DESIGN OF THIS NEW LOGIC IS SET FORTH.

THERE is nothing more desirable than good sense and justness of mind, in discriminating between truth and falsehood. All other qualities of mind are of limited use; but exactness of judgment, is of general utility in every part, and in all the employments of life. It is not alone in the sciences, that it is difficult to distinguish truth from error, but also in the greater part of those subjects which men discuss in their every-day affairs. There are, in relation to almost everything, different routes—the one true, the other false—and it is reason which must choose between them. Those who choose well, are those who have minds well-regulated; those who choose ill, are those who have minds ill-regulated; and this is the first and most important difference which we find between the qualities of men's minds.

Thus, the main object of our attention should be, to form our judgment, and render it as exact as possible; and to this end, the greater part of our studies ought to tend. We employ reason as an instrument for acquiring the sciences; whereas, on the contrary, we ought to avail ourselves of the sciences, as an instrument for perfecting our reason—justness of mind being infinitely more important than all the speculative knowledges which we can obtain, by means of sciences the most solid and well-established. This ought to lead wise men to engage in these only so far as they may contribute to that end, and to

make them the exercise only, and not the occupation, of their mental powers.

If we have not this end in view, the study of the speculative sciences, such as geometry, astronomy, and physics, will be little else than a vain amusement, and scarcely better than the ignorance of these things, which has at least this advantage—that it is less laborious, and affords no room for that empty vanity which is often found connected with these barren and unprofitable knowledges. These sciences not only have nooks and hidden places of very little use, they are even totally useless, considered in themselves, and for themselves alone. Men are not born to employ their time in measuring lines, in examining the relations of angles, and considering the different movements of matter,—their minds are too great, their life too short, their time too precious, to be engrossed with such petty objects; but they ought to be just, equitable, prudent, in all their converse, in all their actions, and in all the business they transact; and to these things they ought specially to discipline and train themselves. This care and study are so very necessary, that it is strange that this exactness of judgment should be so rare a quality. We find, on every side, ill-regulated minds which have scarcely any discernment of the truth; men who receive all things with a wrong bias; who allow themselves to be carried away by the slightest appearances; who are always in excess and extremes; who have no bond to hold them firm to the truths which they know, since they are attached to them rather by chance than by any clear insight; or who, on the *other* hand, entrench themselves in their opinions with such obstinacy, that they will not listen to anything that might undeceive them; who determine rashly about that of which they are ignorant, which they do not understand, and which, perhaps, no one ever could understand; who make no difference between one speech and another, or judge of the truth of things by the tone of voice alone,—he who speaks fluently and impressively being in the right—he who has some difficulty in explaining himself, or displays some warmth, in the wrong: they know nothing beyond this.

Hence it is, that there are no absurdities too groundless

to find supporters. Whoever determines to deceive the world, may be sure of finding people who are willing enough to be deceived; and the most absurd follies always find minds to which they are adapted. After seeing what a number are infatuated with the follies of judicial astrology, and that even grave persons treat this subject seriously, we need not be surprised at anything more. There is a constellation in the heavens which it has pleased certain persons to call the Balance, and which is as much like a balance as a windmill. The Balance is the symbol of justice; those, therefore, that are born under that constellation, will be just and equitable. There are three other signs in the zodiac, which are called, one the Ram, another the Bull, another the Goat, and which might as well have been called the Elephant, the Crocodile, and the Rhinoceros. The Ram, the Bull, and the Goat, are ruminant animals; those, therefore, who take medicines when the moon is under these constellations, are in danger of vomiting them again. Such extravagant reasonings as these, have found persons to propagate them, and others who allow themselves to be persuaded by them.

This falseness of mind is the cause, not only of the errors we meet with in the sciences, but also of the majority of the offences which are committed in civil life,—of unjust quarrels,—unfounded law-suits,—rash counsel, and ill-arranged undertakings. There are few of these which have not their origin in some error, and in some fault of judgment, so that there is no defect which it more concerns us to correct. But this correction is as difficult of accomplishment as it is desirable, since it depends very much on the measure of intelligence with which we are endowed. Common-sense is not so common a quality as we imagine. There are a multitude of minds heavy and dull, which we cannot reform by giving them the understanding of the truth, but only by restricting them to those things which are suited to them, by withholding them from judging about those things which they are not capable of knowing. It is true, nevertheless, that a great part of the false judgment of men does not spring from this principle, but is caused solely by precipitation of mind and want of attention, which leads us to judge rashly about that which we

know only obscurely and confusedly. The little love men have for truth, leads them to take no pains, for the most part, in distinguishing what is true from what is false. They allow all sorts of reasonings and maxims to enter their minds; they like better to suppose things true, than to examine them; if they do not comprehend them, they are willing to believe that others understand them well; and thus they fill the memory with a mass of things false, obscure, and unintelligible, and then reason on these principles, scarcely considering at all, either what they speak or what they think. Vanity and presumption contribute still more to this effect. We think it a disgrace to doubt, and to be ignorant; and we prefer rather to speak and determine at random, than to confess we are not sufficiently informed on the subject to give an opinion. We are all full of ignorance and errors; and yet it is the most difficult thing in the world to obtain from the lips of man this confession, so just, and so suited to his natural state,—I am in error, and I know nothing about the matter.

We find others, on the contrary, who, having light enough to know that there are a number of things obscure and uncertain, and wishing, from another kind of vanity, to show that they are not led away by the popular credulity, take a pride in maintaining that there is nothing certain. They thus free themselves from the labour of examination, and on this evil principle they bring into doubt the most firmly established truths, and even religion itself. This is the source of Pyrrhonism, another extravagance of the human mind, which, though apparently opposed to the rashness of those who believe and decide everything, springs nevertheless from the same source, which is, want of attention. For as the one will not give themselves the trouble of discerning errors, the others will not look upon truth with that care which is necessary for perceiving its evidence. The faintest glimmer suffices to persuade the one of things very false, and to make the other doubt of things the most certain; and in both cases it is the same want of application which produces effects so different.

True reason places all things in the rank which belongs to them; it questions those which are doubtful, rejects those which are false, and acknowledges, in good faith,

those which are evident, without being embarrassed by the vain reasons of the Pyrrhonists, which never could, even in the minds of those who proposed them, destroy the reasonable assurance we have of many things. None ever seriously doubted the existence of the sun, the earth, the moon, or that the whole was greater than its parts. We may indeed easily say outwardly with the lips that we doubt of all these things, because it is possible for us to lie; but we cannot say this in our hearts. Thus Pyrrhonism is not a sect composed of men who are persuaded of what they say, but a sect of liars. Hence they often contradict themselves in uttering their opinion, since it is impossible for their hearts to agree with their language. We see this in Montaigne, who attempted to revive this sect in the last century; for, after having said that the Academics were different from the Pyrrhonists, inasmuch as the Academics maintained that some things were more probable than others, which the Pyrrhonists would not allow, he declares himself on the side of the Pyrrhonists in the following terms: "The opinion," says he, "of the Pyrrhonists is bolder, and much more probable." There are, therefore, some things which are more probable than others. Nor was it for the sake of effect that he spoke thus,—these are words which escaped him without thinking of them,—springing from the depths of nature, which no illusion of opinions can destroy. But the evil is, that in relation to those things which are more removed from sense, these persons, who take a pleasure in doubting everything, withhold their mind from any application, or apply it only imperfectly to that which might persuade them, and thus fall into a voluntary uncertainty in relation to the affairs of religion; for the state of darkness into which they have brought themselves is agreeable to them, and very favourable for allaying the remorse of their conscience, and for the unrestrained indulgence of their passions. Thus, these disorders of the mind, though apparently opposed (the one leading to the inconsiderate belief of what is obscure and uncertain, the other to the doubting of what is clear and certain), have nevertheless a common origin, which is, the neglect of that attention which is necessary in order to discover the truth. It is clear, therefore, that they must also have a common

remedy, and that the only way in which we can preserve ourselves from them, is by fixing minute attention on our judgments and thoughts. This is the only thing that is absolutely necessary to preserve us from deceptions. For that which the Academics were wont to say, that it was impossible to discover the truth unless we had its characters, as it would be impossible to identify a runaway slave we might be in search of, unless we had some signs by which, supposing we were to meet him, we could distinguish him from others, is only a vain subtlety. As no marks are necessary in order to distinguish light from darkness but the light which reveals itself, so nothing else is necessary in order to recognise the truth but the very brightness which environs it, and which subdues and persuades the mind, notwithstanding all that may be said against it; so that all the reasonings of these philosophers are no more able to withhold the mind from yielding to the truth, when it is strongly imbued with it, than they are capable of preventing the eyes from seeing, when, being open, they are assailed by the light of the sun.

But since the mind often allows itself to be deceived by false appearances, in consequence of not giving due attention to them, and since there are many things which cannot be known, save by long and difficult examination, it would certainly be useful to have some rules for its guidance, so that the search after truth might be more easy and certain. Nor is it impossible to secure such rules; for since men are sometimes deceived in their judgments, and at other times are not deceived, as they reason sometimes well and sometimes ill, and as, after they have reasoned ill, they are able to perceive their error, they may thus notice, by reflecting on their thoughts, what method they have followed when they have reasoned well, and what was the cause of their error when they were deceived; and thus on these reflections form rules by which they may avoid being deceived for the future.

This is what philosophers have specially undertaken to accomplish, and in relation to which they make such magnificent promises. If we may believe them, they will furnish us, in that part which is devoted to this purpose, and which they call logic, with a light capable of dispelling all the darkness of the mind; they correct all the

errors of our thoughts; and they give us rules so sure that they conduct us infallibly to the truth,—so necessary, that without them it is impossible to know anything with complete certainty. These are the praises which they have themselves bestowed on their precepts. But if we consider what experience shows us of the use which these philosophers make of them, both in logic and in other parts of philosophy, we shall have good grounds to suspect the truth of their promises.

Since it is not, however, just to reject absolutely the good there is in logic because of the abuse which has been made of it, and as it is not possible that all the great minds which have applied themselves with so much care to the rules of reasoning, have discovered nothing at all solid; and finally, since custom has rendered it necessary to know (at least generally) what logic is, we believed that it would contribute something to public utility to select from the common logics whatever might best help towards forming the judgment. This is the end we specially propose to ourselves in this work, with the view of accomplishing which, there are many new reflections which have suggested themselves to our mind while writing it, and which form the greatest and perhaps the most important part of it, for it appears the common philosophers have attempted to do little more than to give the rules of good and bad reasoning. Now, although we cannot say these rules are useless, since they often help to discover the vice of certain intricate arguments, and to arrange our thoughts in a more convincing manner, still this utility must not be supposed to extend very far. The greater part of the errors of men arise, not from their allowing themselves to be deceived by wrong conclusions, but in their proceeding from false judgments, whence wrong conclusions are deduced. Those who have previously written on logic have little sought to rectify this, which is the main design of the new reflections which are to be found scattered through this book.

It must, however, be acknowledged, that these reflections, which we call new because they have not appeared in any of the common logics, do not all belong to the author of this work, and that some of them he has borrowed from the books of a celebrated philosopher of this

age, who is distinguished as much for perspicuity as others are for confusion of mind. Some others have been obtained from a small unpublished work of the late M. Pascal, called by him "*The Spirit of Geometry.*" What is said in the Ninth Chapter, touching the definition of names and things, is derived from this source, and also the five rules which are explained in the Fourth Part, which are, however, extended much farther than they were in that writing.

. With respect to what has been taken from the common books of logic, the following is to be observed: *In the first place*, it is intended to comprise in this work all that was really useful in the others; such as the rules of figure, the divisions of terms and ideas, certain reflections on propositions. There are other things which we deem sufficiently profitless; such as the categories and the laws, but which, as they were short, easy, and common, we did not think it right to omit, forewarning the reader, however, what judgment to form of them, in order that he might not suppose them to be more useful than they are.

More of doubt arose in relation to certain matters difficult enough and but of little use; such as the conversion of propositions, and the demonstration of the rules of figure; but we have determined not to omit them, since their very difficulty is not altogether without its use, for although it is true that where a difficulty leads to the knowledge of no truth, we have reason to say, "*stultum est difficiles habere nugas,*" yet we ought not to avoid it in the same way when it contains some truth, since it is beneficial to exercise oneself in the comprehension of difficult truths.

There are some stomachs which can only digest light and delicate food, and so there are some minds which can only apply themselves to understand truths which are easy, and garnished with the ornaments of eloquence. This is, in either case, a blameworthy fastidiousness,—or, rather, a real weakness. We ought to train our minds to discover the truth, however concealed or disguised it may be, and to respect it under whatever form it may appear. If we do not overcome this distaste and aversion, which is the easiest thing in the world, to contract at anything which ap-

pears a little subtle or scholastic, we shall insensibly contract our minds, and render them incapable of understanding those things which are only to be known through the connection of many propositions; and thus, when a truth depends on three or four principles, which it is necessary to look at all at once, we are perplexed and discouraged, and are deprived in this way of the knowledge of many useful things, which is a great defect.

The capacity of the mind is enlarged and extended by exercise; and to this the mathematics, and generally all difficult things, such as those we are speaking of, mainly contribute; for they give a certain expansion to the mind, and practise it to consider more attentively, and hold more firmly, that which it knows. These are the reasons which have induced us to retain these difficult matters, and even to treat them as subtilely as any other logic. Those who object to this may pass over these parts without reading them. To this end, we have taken care duly to forewarn them at the head of the chapters, that they may have no ground of complaint, and that, if they read them, they may do it voluntarily. Neither have we thought it needful to be perplexed by the distaste of some who have quite a horror of certain artificial terms, which have been invented for the purpose of retaining more easily the different ways of reasoning, as though they were words of magic; and who often make jests, insipid enough, on *baroco* and *baralipton*, as savouring strongly of pedantry, for we judged these jests to be more contemptible than the words themselves. True reason and good sense do not allow us to treat as ridiculous that which is not so. Now, there is nothing ridiculous in these terms, provided they be not made too mysterious; and that, as they were only made to assist the memory, we do not introduce them in common discourse, and say, for instance, that we are going to reason in *bocardo*, or in *felapton*, which would indeed be very ridiculous.

The reproach of pedantry is sometimes much abused, and often, in attributing it to others, we fall into it ourselves. Pedantry is a vice of the mind, and not of a profession; and there are pedants in all robes, and in every state and condition of life. To extol things trivial

and mean,—to make a vain show of science,—to heap together Greek and Latin quotations without judgment,—to get in a passion about the order of the Attic months, the garments of the Macedonians, and such other useless disputes,—to pillage an author while abusing him,—to decry outrageously those who are not of our opinion as to the meaning of a passage in Suetonius, or as to the etymology of a word, as if religion and the state were endangered thereby,—to wish to excite all the world against a man who does not sufficiently appreciate Cicero, as against a disturber of the public peace, as Julius Scaliger attempted to do against Erasmus,—to interest oneself in the reputation of an ancient philosopher, as though he were one's own parent,—this is what may be truly called pedantry. But there is none at all in understanding and explaining artificial terms, ingeniously enough devised for the sole purpose of assisting the memory, provided they be employed with the precautions which we have already indicated.

It only remains for us to explain why we have omitted a great number of questions which are found in the common logics;—such as those which are treated of in the prolegomonas, the universal *á parte rei*, *the relations*, and many others of a similar kind, of which it is almost enough to say that they belong rather to metaphysics than to logic. It is true, however, notwithstanding that this is not the main thing which we considered; for, if we judged that a subject would be useful in forming the judgment, we cared but little to what science it belonged. The arrangement of our different knowledges is free as that of the letters in a printing office,—each has the right of arranging them in different classes according to his need, so that, in doing this, the most natural manner be observed. If a matter be useful, we may avail ourselves of it, and regard it, not as foreign, but as pertinent to the subject. This explains how it is that a number of things will be found here from physics and from morals, and almost as much of metaphysics as it is necessary to know, though in this we do not profess to have borrowed anything from any one. All that is of service in logic belongs to it; and it is quite ridiculous to see the trouble that some authors have given

themselves—as Ramus and the Ramists,—though otherwise very able men, who have taken as much pains to limit the jurisdiction of each science, and to prevent them from trespassing on each other, as might be taken in marking out the boundaries of kingdoms, and determining the prerogatives of parliament.

What led us to omit altogether those questions of the schools was, not simply that they are difficult, and of little use, since we have considered some of this nature,—but that, having these bad qualities, we believed we could more easily omit all mention of them, without offending any one, inasmuch as they are held in but little esteem. For there is a great difference to be observed among the useless questions, of which books of philosophy are full. There are some which are despised even by those who discuss them; and there are others, on the contrary, which are celebrated and accredited, and have obtained a place in the writings of men of great repute.

It seems to be a duty which we owe to these well-known and celebrated opinions, however false we may believe them to be, not to be ignorant of what is said concerning them. We owe this civility, or rather justice, not to their falseness, which merits none, but to the men who have favoured them,—not to reject what they have valued, without examination. It is reasonable thus to purchase, by means of the trouble taken in understanding them, the right to despise them.

But we have more liberty in relation to the former; and the logical ones which we have thought right to omit are of that kind. They have this advantage, that they are held in no esteem, not only in the world, where they are unknown, but by those even who teach them. No one, thank God, now takes any interest in the universal *à parte rei*, in *beings of reason*, or in *second intentions*. Thus there is no ground to apprehend that any one will be offended at our having said nothing about them; besides which, these matters are so ill adapted to the French language, that they would have tended rather to degrade the philosophy of the schools than to make it esteemed.

It is right, also, to mention that we have not always followed the rules of a method perfectly exact, having

placed many things in the Fourth Part which ought to have been referred to the Second and Third; but we did this advisedly, because we judged that it would be useful to consider in the same place all that was necessary in order to render a science perfect; and this is the main business of method which is treated of in the Fourth Part. For this reason, also, we reserved what was to be said of axioms and demonstrations for the same place.

These, in brief, are the views we have had in writing this logic. Perhaps, after all, there are few persons who will profit by it, or who will be conscious of the good they have obtained from it, because but little attention is commonly given to putting precepts in practice by express reflections on them. But we hope, nevertheless, that those who have read it with some care may receive an impression from it which will render them more exact and solid in their judgments, even without their being conscious of it, as there are some remedies which cure diseases by increasing the strength and fortifying the parts. Be this as it may, it cannot trouble any one long,—those who are a little advanced being able to read and understand it in seven or eight days; and it will be strange if, containing so great a diversity of things, each does not find something to repay him for the trouble of reading it.

DISCOURSE II.

CONTAINING A REPLY TO THE PRINCIPAL OBJECTIONS WHICH HAVE BEEN MADE AGAINST THIS LOGIC.

Those who have determined to make their works public, ought, at the same time, to calculate on having as many judges as readers; and this condition they should not consider either unjust or onerous. For if they are really dis-

interested, they ought, in making their works public, to have abandoned all property in them, and to consider them henceforth with the same indifference as they would those of strangers. The only right which they can legitimately reserve to themselves, is that of correcting what may be defective, for which purpose these different criticisms which are made on books, are extremely serviceable; for they are always useful when they are just, and do no harm when they are unjust, since we are not obliged to follow them.

Prudence would nevertheless dictate that we should often yield to those judgments which do not appear to us just; since, though we may not see any fault in that which is objected to, we may see, at least, that it is not adapted to the minds of those who complain of it. It is doubtless better, when we are able to do so without falling into a greater inconvenience, to choose a medium so just, that, in pleasing judicious persons, we do not displease those who have a judgment less exact, since we ought not to suppose that we shall have none but intelligent and able readers.

Thus, it were to be desired that the first editions of books be considered only as unfinished essays, which are submitted by their authors to men of letters, in order to obtain their opinions respecting them; and that then, with the different views which these different opinions have given them, they should go through the whole again, in order to exhibit their works in the most perfect form to which they can bring them. This is the course which we should have liked much to have followed in the Second Edition of this Logic, if we had heard more of what was said in the world about the First. We have, nevertheless, done what we could, and have added, suppressed, and corrected many things, in obedience to the thoughts of those who have had the goodness to let us know what they discerned faulty in it.

And, *in the first place*,—As to the language, we have followed almost entirely the advice of two persons, who have taken the trouble to point out some defects which had slipped into the work through negligence; and certain expressions, which they considered were not sanctioned by good usage. And we have failed to comply with their

views, only when, on consulting others, we found that opinions were divided, in which case we thought we might be allowed to take a free course.

In relation *to things*, there will be found more additions, than either alterations or retrenchments, since we were less acquainted with what was objected to in this respect. It is true, nevertheless, that we knew of some general objections, which were made against this book, but we did not think it right to dwell upon these, since we were persuaded that those even who made them, would be easily satisfied, when we had pointed out to them the design which we had in view in those things of which they complain. Hence, it will be useful, here, to reply to the chief of these objections.

We have found some persons who are dissatisfied with the title, *The art of thinking*, instead of which they would have us put, *The art of reasoning well*. But we request these objectors to consider, that, since the end of logic is to give rules for all the operations of the mind, and thus as well for simple ideas as for judgment and reasonings, there was scarcely any other word which included all these operations; and the word *thought* certainly comprehends them all; for simple ideas are thoughts, judgments are thoughts, and reasonings are thoughts. It is true that we might have said, *The art of thinking well*, but this addition was not necessary, since it was already sufficiently indicated by the word *art*, which signifies, of itself, a method of doing something well, as Aristotle himself remarks. Hence it is, that it is enough to say, the art of painting, the art of reckoning, because it is supposed that there is no need of art in order to paint ill, or reckon wrongly.

Another objection, much more weighty, has been made against the multitude of things, taken from different sciences, which is to be found in this Logic. This objection it is necessary to examine with more care, since it attacks the design of the whole work; and thus gives us an opportunity of explaining that design. "To what end," it is asked, "is all this medley of Rhetoric, Ethics, Physics, Metaphysics, and Geometry? When we expect to find logical precepts, we are suddenly transported to the highest sciences, while the author knows not whether we under-

stand them or no. Ought he not to suppose, on the contrary, that if we had already all these knowledges, we should have no need of this Logic? And, would it not have been better for him, to have given us one quite simple and plain, in which the rules should have been explained by examples taken from common things, than to have embarrassed it with so many matters, that it is quite stifled?"

But those who reason thus, do not sufficiently consider that a book can scarcely have a greater defect, than that of not being read, since it can only benefit those who read it; and that thus everything which helps to make a book read, contributes also to its usefulness. Now, it is certain, that if we had followed their advice, and had made a logic altogether barren (with the ordinary examples, of an animal and a horse), we should only have added to the number of those of which the world is already full, and which are not read. Whereas, it is just that collection of different things which has given this work such a run, and caused it to be read with less distaste than is felt in reading others.

This was not, however, the principal design we had in this collection,—to induce all the world to read it, by rendering it more diverting than the common logics. We maintain, rather, that we have followed a course the most natural, and the most advantageous for illustrating this art, in remedying, as far as possible, an inconvenience which had rendered the study of it almost useless.

For experience shows that, of a thousand young men who learn logic, there are not ten who remember anything of it six months after they have finished their course. Now the true cause of this oblivion, this ignorance, which is so common, appears to be,—that all the subjects which are treated of in logic, being in themselves very abstract, and very far removed from common use, are still connected with examples of no interest, and of which we never speak elsewhere. Thus the mind, which had attended to the subject with difficulty, having nothing to keep up its attention, easily loses all the ideas, which it had received respecting it, since they are never renewed by practice. Again, since the common examples do not sufficiently make

it understood, that this science is applicable to everything useful, the learners are accustomed to restrict logic to logic, without extending it further; whereas, it exists for the very purpose of being an instrument to other sciences. And thus, as they have never seen its true use, they never use it at all, and are willing enough even to lay it aside as an unworthy and useless knowledge. We believed, therefore, that the best remedy of this evil was, not to separate logic, so much as is commonly done, from other sciences, for whose service it is intended; but, by means of examples, to join it in such a manner to solid knowledges, that the rules and the practice might be seen at the same time; to the end that we might learn to judge of these sciences by logic, and to retain logic by means of these sciences. Thus this diversity is so far from stifling the precepts, that nothing can contribute more towards making them well understood, and easily retained; since they are in themselves too subtle to make an impression on the mind, unless they are attached to something more interesting and more sensuous.

In order to render this collection the more useful, we have not borrowed the examples from these sciences at random; but have chosen from them, the most important points, and such as might best serve as rules and principles for the discovery of truth in other matters which we were not able to discuss.

For example, in relation to *rhetoric*, we considered that the help which we were able to obtain from it, in finding thoughts, expressions, and embellishments, was not very considerable. The mind furnishes thoughts enough, custom gives forms of expression, and as for figures and ornament, we have always more than enough of these. Thus its whole use almost consists in preserving us from certain bad ways of writing and speaking, and especially from an artificial and rhetorical style, which is the greatest of all vices. Now there will be found, perhaps, in this Logic, as much that is useful for knowing and avoiding these defects as in the books which treat expressly of that subject. The last Chapter of the First Part, in showing the nature of a figurative style, teaches, at the same time, the use which ought to be made of it, and discovers the true rules by

which we ought to distinguish good and bad figures. That in which we treat of places in general, will much help to restrain the superfluous abundance of common thoughts. The article where we speak of the bad reasonings which eloquence insensibly begets, in teaching that we should never consider that which is false as beautiful, propounds, in passing, one of the most important rules of true rhetoric, and one which will, more than all others, form the mind to a manner of writing, simple, natural, and judicious. Finally, what we have said in the same chapter of the care which ought to be taken not to excite the malignity of those whom we address, teaches us to avoid a very great number of defects, which are so much the more dangerous, as they are difficult to detect.

In relation *to morals*, the main subject treated of did not permit us to insert much. I believe, however, that it will be allowed, that what is found in the chapter on false ideas of good and evil, in the First Part, and that which treats of the wrong reasonings which are common in civil life, is of very wide application, and may help to make us acquainted with a great part of the errors of mankind.

In *metaphysics*, there is nothing more important than the origin of our ideas,—the separation of spiritual ideas from corporeal images,—the distinction between mind and body, and the evidences of the soul's immortality, founded on this distinction; and these points, it will be seen, are treated of very fully in the First and Fourth parts.

There will be found, also, in different places, the greater part of the general principles of *physics*, which are very easily apprehended; and sufficient light may be obtained from what is said of ponderosity, of sensible qualities, of the operations of sense, of magnetic powers, of occult virtues, and of substantial forms, to correct a multitude of false ideas, which the prejudices of youth have left in our minds; not that we shall thus be enabled to dispense with the more careful study of all these things in the books which treat expressly of them, but we considered that there were many persons not devoted to the study of theology (for which it is necessary to know minutely the philosophy of the schools, which is, as it were, its language), for whom a more general knowledge of these sciences

might suffice. Now, although there will not be found in this book all that it is necessary for us to know in relation to these subjects, we may nevertheless say, with truth, that there will be found almost all that it is needful for us to remember.

The objection, that there are some of the examples which are not sufficiently adapted to the intelligence of beginners, is true only in relation to the geometrical examples; for, as to the others, they may be understood by all who have any expansion of mind, though they had never learnt anything of philosophy; and perhaps, indeed, they will be more readily understood by those who have as yet no prejudices, than by those who have their minds filled with the maxims of the common philosophy. In relation to the examples from geometry, it is true that they will not be understood by every one; for we believe that they will scarcely ever be found, except in express and separate discussions, which may easily be passed over, or in matters clear enough of themselves, or sufficiently illustrated by other examples, to render those taken from geometry unnecessary. Again, if the places in which these are employed be examined, it will be seen that it would have been very difficult to find others equally suitable, since scarcely anywhere but in this science can we obtain ideas which are quite pure, and propositions which are incontestible. For example, we have said, in speaking of reciprocal properties, that it was one of rectangled triangles, that the square of the hypothenuse is equal to the square of the sides. This is clear and certain to those who understand it, and those who do not understand it may suppose it, and comprehend none the less the theory to which this example is applied.

But if we had determined to employ the example which is commonly used—risibility—which is said to be a property of man, we should have advanced a thing obscure enough, and very doubtful; for, if we understand by the word risibility the power of making such a grimace as is made in laughing, we do not see why brutes may not be trained to make such a grimace, and perhaps, indeed, there are some who do so. But if we include in this word, not only the change which laughing makes in the countenance, but also the intelligence which accompanies and produces

it, and thus understand, by risibility, the power of laughing with intelligence,—all the actions of man ought, in the same way, to be considered reciprocal properties, there being none of them which are not peculiar to man alone, when connected with intelligence. Thus we may say that it is the property of man to walk, to drink, to eat, since it is man only who walks, drinks, and eats with intelligence. Provided we extend it thus, we shall be in no want of examples of properties; but still these will not be certain to the minds of those who attribute intelligence to truth, and who may, therefore, equally well attribute to them laughing with intelligence, whereas the example which we have employed is certain to the minds of all men.

In the same way, we wished to show, in another place, that there are some corporeal things which we conceive after a spiritual manner, and without imagining them; and for this purpose, we referred, as an example, to a figure of a thousand angles, which we conceive clearly by the mind, although we are not able to form any distinct image which represents its properties; and we said, in passing, that one of the properties of that figure was, that all its angles were equal to 1996 right angles. It is clear that this example proves very well what we wished to show in that place.

It only remains for us to answer a more odious objection, which some persons have founded on the examples of imperfect definitions and bad reasonings, which we have taken from Aristotle, and which appear to them to be the offspring of a secret desire to degrade that philosopher. But they would never have formed a judgment so inequitable, had they sufficiently considered the true rules which ought to be regarded in citing examples of faults, and which we have had in view in quoting Aristotle.

In the first place, experience shows that the greater part of the examples commonly given are of little use, and remain but for a short time in the mind, as they are formed at pleasure, and are so plain and palpable, that it is scarcely possible to fall into them.

It is, therefore, more serviceable, in order to make us remember what is said of these defects, and to avoid them, to choose real examples, taken from some author of celebrity, whose reputation may arouse us to be more on our

guard against such mistakes, seeing that the greatest men may commit them.

Again, as our aim ought to be to render all that we have written as useful as possible, we ought to endeavour to select examples of faults which it is important not to be ignorant of; for it would be very useless to burden the memory with all the reveries of Fludd, of Vanhelmont, and of Paracelsus. It is better, therefore, to seek for examples in the works of authors so celebrated that we are in some sort obliged to know them, even to their defects.

Now all this is found in perfection in Aristotle; for nothing can tend more powerfully to avoid a fault than showing that so great a mind has fallen into it; and his philosophy has become so celebrated by the great number of persons of repute who have embraced it, that we are under the necessity of knowing even the defects which it may have. Thus, as we judged it very useful for those who might read this book to learn, in passing, various points of that philosophy, and that, nevertheless, it was not at all useful to be deceived, we have referred to these in order to explain them; and we have indicated, by the way, any defects which might be found in them, in order to prevent any from being deceived.

It was not, therefore, to degrade Aristotle, but, on the contrary, to do him as much honour as possible, in those things wherein we differed from his opinion, that we took these examples from his works; and it is plain that the points which we have criticised are of very little importance, and do not affect the foundation of his philosophy, which we had no intention whatever of assailing. And if we have not referred to those many excellent things which are to be found everywhere in the books of Aristotle, it is because no occasion offered for these, in the course of our work; but if we had found occasion, we should have introduced them with pleasure, and should not have failed to give him the just praises which he merits. For it is certain that Aristotle had, in truth, a very vast and comprehensive mind, which discovers in the subjects of which he treats a great number of connections and consequences; and hence he has been very successful in what he has said of the passions in the Second Book of his Rhetoric. There

are also many beautiful things in his books of Politics and of Ethics, in the Problems, and in the History of Animals. And whatever confusion may be found in his Analytics, it must be confessed, nevertheless, that almost all that we know of the rules of logic is taken thence; so that there is, in fact, no author from whom we have borrowed more in this Logic than from Aristotle.

It is true that his Physics appears to be the least perfect of his works, as it was that which was for the longest time condemned and prohibited by the church, as a learned author has shown, in a book written expressly for this purpose;* but still the principal defect to be found in this part of his work is, not that it is false, but, on the contrary, that it is too true, and that it teaches us only things of which it is impossible to be ignorant. But who can doubt that all things are composed of matter, and a certain form of that matter? Who can doubt that matter, in order to acquire a new manner and a new form, needs something which it had not before,—that is to say, that it had the privation of it? And, in fine, who can doubt, those other metaphysical principles, which all depend on form —that matter alone does nothing—that there are place, movements, faculties? But after we have learned all these things, we do not seem to have learned anything new, or to be at all better able to give an account of any of the effects in nature.

If any are to be found who maintain that it is not lawful for us to declare that we are not of Aristotle's opinion, it will be easy to show them that this scrupulousness is very unreasonable; for, if we ought to yield deference to any philosophers, this can only be for two reasons, either on account of the truth which they maintained, or on account of the opinion of the men who have supported them. In regard to the truth, they ought always to be respected when they have reason on their side; but the truth can never oblige us to respect falsehood in any man, be he who he may. With regard to the agreement of men, and the approval of a philosopher, it is certain that it also merits some respect, and that it would be imprudent

* M. de Launoi, in his book, *De Varia Aristotelis Fortuna.*

to oppose it, without using great precautions; and the reason of this is, that in attacking what is received by all the world, we expose ourselves to the charge of presumption by supposing that we have more light than others; but when the world is divided with regard to the opinions of an author, and many men of reputation on both sides, we are not bound to this reserve, and we may freely declare what we approve, and what we do not approve, in those books in relation to which men of letters are divided, because, in this case, we do not so much prefer our own opinion to that of this author, and those who support him, as arrange ourselves on the side of those who are opposed to him on this point.

This is properly the state in which we now find the philosophy of Aristotle. For, having had divers fortunes, —being at one time generally rejected, and at another generally approved,—it is now reduced to a state which is a medium between these extremes, being maintained by many learned men, while it is attacked by others of equal reputation. Works are continually and freely written in France, in England, in Holland, and in Germany, for and against the philosophy of Aristotle. The conferences at Paris are divided, as well as the books, and no one offends now by declaring himself against him. The most celebrated philosophers are bound no longer to the slavery of receiving blindly whatever they find in his books; and there are even opinions of his which are generally abandoned, for where is the physician now who would undertake to maintain that the nerves come from the heart, as Aristotle believed, since anatomy has clearly proved that they have their origin from the brain?—whence Saint Augustine says, "*Qui ex puncto cerebri et quasi centro sensus omnes quinaria distributione diffudit.*" And where is the philosopher who is hardy enough to affirm that the swiftness of heavy things increases in the same ratio as their weight, since there is no one now who may not disprove this doctrine of Aristotle's by letting fall from a high place very unequal weights, in the swiftness of which, nevertheless, there will be remarked very little difference?

No violent states are commonly of long duration, and all extremes are violent. It is very hard to condemn

Aristotle generally, as was formerly done, and it is a very great constraint to be obliged to believe and approve everything he has written, and to take him as the test of truth in all philosophical opinions, which was afterwards done. Men cannot long endure such constraint, and return insensibly to the possession of their natural and rational freedom, which consists in receiving that which is judged to be true, and rejecting that which is judged to be false. For there is nothing contrary to reason in yielding to authority in those sciences which, treating of things which are above reason, ought to follow another light,—and this can only be that of Divine authority; but there is no ground whatever in human sciences, which profess to be founded only on reason, for being enslaved by authority contrary to reason. The rule which we have followed in speaking of the opinions of philosophers, both ancient and modern, is this,—we have considered truth alone in both, without espousing, generally, the opinions of any one in particular, and also without declaring ourselves generally against any one. So that all that ought to be inferred, when we reject the opinion either of Aristotle or of another, is, that we do not agree with this author in that particular; it cannot be at all inferred that we do not do so in other points, much less that we have any aversion to him, or any desire to degrade him. We believe that this disposition will be approved of by all impartial persons, and that there will be found, through the whole of this work, only a sincere desire of contributing to public utility, as far as we may be able to do so in a work of this nature, without any prejudice or partiality.

LOGIC,

OR

THE ART OF THINKING.

LOGIC is the ART OF DIRECTING REASON ARIGHT, IN OBTAINING THE KNOWLEDGE OF THINGS, FOR THE INSTRUCTION BOTH OF OURSELVES AND OTHERS. It consists in the reflections which have been made on the four principal operations of the mind: *conceiving (concevoir)*, *judging*, *reasoning*, and *disposing (ordonner)*.

By *conception* is meant the simple view we have of the objects which are presented to our mind; as when, for instance, we think of THE SUN, THE EARTH, A TREE, A CIRCLE, A SQUARE, THOUGHT, BEING, without forming any determinate judgment concerning them; and the form through which we consider these things is called AN IDEA.

Judgment is that operation of the mind through which, joining different ideas together, it affirms or denies the one of the other; as when, for instance, having the ideas of the EARTH and ROUNDNESS, it affirms or denies of the earth that it is round.

Reasoning is that operation of the mind through which it forms one judgment from many others; as when, for instance, having judged that true virtue ought to be referred to God, and that the virtue of the heathens was not referred to him, we thence conclude that the virtue of the heathens was not true virtue.

By *disposition* is here meant that operation of the mind, by which, having on the same subject (the human body, for instance), different ideas, judgments, and reasonings, it disposes them in the manner best fitted for obtaining a knowledge of the subject. This is also called *Method*.

All these operations are performed naturally, and often times better by those who are unacquainted with the rules of logic than by those who know them.

Thus logic consists, not in discovering the means of performing these operations, since nature alone furnishes these in giving us reason, but in reflecting on that which nature does within us, which is of service to us in the following respects:—

First, In assuring us that we employ reason aright; for the consideration of the rule which guides it, awakens within us fresh attention to its operations.

Second, In enabling us to discover and explain more easily any error or defect which may be found in the operations of our mind; for it often happens that we discover, by the light of nature alone, that a reasoning is false, without being able to determine how it is so, as those who are not skilled in painting may be sensible of defect in a picture, without being able, nevertheless, to explain what is the blemish which offends them.

Third, In making us better acquainted with the nature of our mind, by the reflections which we thus make on its operations. And this is, in itself, more excellent, considered merely in a speculative point of view, than the knowledge of all corporeal things, which are infinitely beneath those which are spiritual.

And if the reflections which we make on our thoughts referred to ourselves alone, it would suffice to consider them in themselves, without having recourse to words or any other signs. But since we are not able to express our thoughts to each other, unless they are accompanied with outward signs; and that this custom is so strong, that even when we think alone, things present themselves to our minds only in connection with the words to which we have been accustomed to have recourse in speaking to others;—it is necessary, in logic, to consider IDEAS in their connection with WORDS, and WORDS in their connection with IDEAS.

From what has been said, it follows that logic may be divided into four parts, according to the different reflections which are made on the four operations of the mind.

FIRST PART.

CONTAINING REFLECTIONS ON IDEAS, OR ON THE FIRST OPERATION OF THE MIND, WHICH IS CALLED CONCEIVING (*CONCEVOIR*).

SINCE we cannot have any knowledge of *that which is without us*, save through the medium of *ideas which are within* us, the reflections which may be made on our ideas form perhaps the most important part of logic, since it is that which is the foundation of all the rest.

These reflections may be reduced to FIVE HEADS, according to the five ways in which ideas may be considered.

First,—IN RELATION TO THEIR NATURE AND ORIGIN.

Second,—IN RELATION TO THE PRINCIPAL DIFFERENCE OF THE OBJECTS WHICH THEY REPRESENT.

Third,—IN RELATION TO THEIR SIMPLICITY OR COMPOSITION, IN WHICH THE ABSTRACTION AND PRECISION OF THE MIND IS TO BE CONSIDERED.

Fourth,—IN RELATION TO THEIR EXTENSION OR RESTRICTION,—THAT IS TO SAY, THEIR UNIVERSALITY, PARTICULARITY, AND INDIVIDUALITY.

Fifth,—IN RELATION TO THEIR CLEARNESS AND OBSCURITY, OR DISTINCTNESS AND CONFUSION.

CHAPTER I.

OF IDEAS IN RELATION TO THEIR NATURE AND ORIGIN.

THE term idea, is amongst the number of those words which are so clear that they cannot be explained by others, since there are none more clear and simple than themselves. All, therefore, that can be done to avoid mistake, is to indicate the false interpretation of which this word is susceptible, in restricting it to signify exclusively that method of conceiving things, which is accomplished by the application of the mind to those images which are depicted in the brain, and which is called imagination.

For, as St Augustine often remarks, man, since the fall, has been so accustomed to consider exclusively things corporeal, whose images enter the brain through sense, that the majority of men believe that they can have no notion of a thing which they cannot imagine,—that is to say, which they cannot represent under a corporeal image, as though this were the only way of thinking and conceiving; whereas, on the contrary, we cannot reflect on what passes in our minds, without recognising that we conceive a very great number of things of which we have no image at all, and that it is thus alone that we perceive the difference between the imagination and pure intellect. Thus, for example, when I imagine a triangle, I not only conceive it as a figure bounded by three right lines; but, further than this, I consider these three lines as present by the internal attention and activity of my mind, and in this I am properly said to imagine. But if I will to think a figure with a thousand angles, I can indeed consider that it is a figure composed of a thousand sides, as easily as I conceive that a triangle is a figure composed of three sides; but I cannot imagine the thousand sides of that figure, or regard them (so to speak) as present to the eyes of my mind.

It is nevertheless true, that the habit we have of aiding

ourselves through imagination, when we think upon corporeal things, would generally lead us, in considering a figure of a thousand angles, to represent confusedly some figure in the mind; but it is evident that the figure thus represented in imagination is not a figure of a thousand angles, since it differs in nothing from that which I should represent to myself, if I thought of a figure with six thousand angles, and does not enable me, on any side, to discover the properties which constitute the difference between the figure of a thousand angles and any other polygon.

I am not therefore able, properly speaking, to imagine a figure of a thousand angles, since the image of it which I strive to paint, in imagination, represents equally well any other figure with a great number of angles. I am, nevertheless, able to conceive it very clearly and distinctly, since I can demonstrate all its properties; as, for instance, that all its angles are together equal to 1,996 right angles. Hence it follows, that it is one thing *to imagine*, and another *to conceive*.

This is still more clear from the consideration of many things which we conceive very clearly, though they are not in any sort among the number of those things which we are able to imagine. For do we conceive anything more clearly than our thought when we think? And yet it is impossible to imagine a thought, or to paint any image of it in the brain. We cannot have any image of affirmation and negation; he who judges that the earth is round, and he who judges that it is not round, have both the same thing painted on the brain, to wit, the earth and roundness; but one adds to these, affirmation, an operation of the mind which he conceives without any bodily image, and the other, a contrary operation, negation, of which it is still less possible to form any image.

When, therefore, we may speak of *ideas*, we do not call by that name the images which are depicted in imagination, but everything which is in our mind when we can say with truth, that we conceive a thing in whatever way it may be conceived.

Whence it follows, that we can express nothing by our words, when we understand what we say, without having an idea of the thing which we signify by our words,

though sometimes that idea may be more clear and distinct, and sometimes more obscure and confused, as will be hereafter explained. For it would be a contradiction to maintain that I know what I say in pronouncing a word, and that, nevertheless, I conceive nothing in pronouncing it, but the sound of the word itself. Hence, too, may be seen, the falseness of two very dangerous opinions which have been advanced by some philosophers of our time.

The first is,—that we have no idea of God. For if we had no idea connected with it in uttering the name of God (Dieu), we could conceive only these four letters D i e u, and a Frenchman, in hearing the name of God, would have nothing more in his mind than if, entering a synagogue, and being altogether ignorant of the Hebrew language, he heard pronounced in that tongue Adonai or Elohim. And when men have taken the name of God, as Caligula and Domitian, they would not have been guilty of any impiety, since if no idea be attached to them, there is nothing in these letters or syllables which may not be attributed to a man. Whence also was not the Hollander accused of impiety who called himself *Ludovicus Dieu*? In what then consisted the impiety of those princes but in this,—that, connecting with the word God a part, at least, of its idea, as that of an exalted and adorable nature, they appropriated to themselves the name with this idea?

But if we have no idea of God, what possible foundation is there for all that we say respecting Him,—as that he is one alone, that he is eternal, all-powerful, all-good, all-wise,—since there is nothing of all this contained in this sound, Dieu; but in the idea alone which we have of God, which we have connected with that sound. And it is only on this account that we refuse the name of God to all false divinities; not because the word may not be attributed to them if it be taken materially, since it has been attributed to them by the heathens; but because the idea which we have of a Sovereign Being, and which custom has connected with the word God, belongs to the true God alone.

The second of these false opinions is that of an Englishman, who says,—*that reasoning is nothing but an assemblage of names connected together by the word* est. *Whence it follows, that by reason we conclude nothing at all con-*

cerning the nature of things, but only concerning their appellations; that is to say, we consider simply whether we have connected together these names of things well or ill, in relation to the agreements we have established in our imagination touching their signification.

To which he adds;—*if this be so, as it very possibly is, reasoning will depend on words, words on imagination, and imagination will depend, perhaps, as I believe it does, on the movements of the bodily organs: and thus our mind will be nothing more than a movement among certain parts of an organised body.*

We are willing to believe that these words contain an objection far removed from the mind of their author; but since, taken dogmatically, they tend to the destruction of the immortality of the soul, it is important to show their falsehood, which it will not be difficult to do. For the convention of which that philosopher speaks, could never have been anything more than the determination to which men have come to take certain sounds as the signs of ideas which we have in our minds. So that, if, besides the names, we have not within the ideas of the things, that convention would have impossible, as it is impossible by any convention to make a blind man understand what is meant by the words, red, green, or blue; because, not having these ideas, he is unable to connect them with any sound. Further, different nations having given different names to things, and even to those which are most clear and simple—as, for instance, to those which are the objects of geometry—they could not have the same reasonings touching the same truths, if reasoning were only an assemblage of names connected together by the word *est*. And thus, too, it appears, in consequence of these different words, that the Arabians, for example, who do not agree with the French in giving the same significations to sounds, would not be able at all to agree in their judgments and reasonings, if their reasonings depended on that convention.

In fine, when we speak of the signification of words as arbitrary, there is much that is equivocal in the term *arbitrary*. It is indeed a thing quite arbitrary that we join a given idea to a certain sound, rather than to another; but the ideas are not arbitrary things, and do not depend upon

the idea

our fancy; at all events those which are clear and distinct. And this may be clearly shown, since it would be ridiculous to suppose that effects which are very real could depend on things purely arbitrary. When, for instance, a man has by reasoning come to the conclusion that an iron axle which passes through the two stones of a mill, might be turned without turning the one below, if being round it pass through a round hole; but that it could not be turned without turning the one above, if being square it were fixed in a square hole in this upper stone; the effect which he has supposed follows infallibly. And therefore, his reasoning in this case was not an assemblage of names according to a convention which depends entirely on the fancy of men; but a solid and effective judgment on the nature of things through the consideration of certain ideas which he had in his mind, and which it has pleased men to represent by certain names.

We see therefore sufficiently what is understood by the term *idea*, it remains to say a word or two of their origin.

The whole question resolves itself into this,—whether all our ideas come to us through sense, and whether we may accept, as true, that common maxim—*nihil est in intellectu quod non prius fuerit in sensu.* This is the opinion of a philosopher of repute, who commences his logic with this proposition,—*Omnis idea orsum ducit a sensibus.* Every idea takes its origin from sense. He confesses, however, that all our ideas have not been in our sense in the same form which they are in our mind; but he maintains that they have at least been formed from those which had come through our sense, either by *composition*, as when, for instance, from the separate images of gold, and a mountain, we form a mountain of gold; or, by *amplification* and *diminution*, as when, from the image of a man of ordinary stature, we form a giant or a pigmy; or, by *accommodation* and *analogy*, as when, from the idea of a house which we have seen, we form the image of a house which we have not seen. "And thus," says he, "we conceive God, who is not an object of sense, under the image of a venerable old man." According to that opinion, though some of our ideas might not resemble any particular body which we had seen, or which had struck our sense, they would, nevertheless, be all corporeal, and we could represent

nothing which had not entered through sense, at least in part. And thus we could conceive nothing but by means of sensible images of those, to wit, which are formed in our brain, when we see or imagine to ourselves some corporeal object.

But, although this opinion is common to him with many philosophers of the schools, I do not hesitate to say that it is very absurd, and as contrary to religion as it is to true philosophy; for, to say nothing of its clearness, is there anything which we perceive more distinctly than our thought itself; or can any proposition be more clear than this,—*I think, therefore, I am?* Now we cannot have any certainty of this proposition, unless we conceive distinctly what it is *to be* and what it is *to think;* and it cannot be demanded that we explain these terms, because they are among the number of those which are so well understood by all the world, that they would only be obscured by any attempt at explanation. If, therefore, it cannot be denied that we have within, ideas of *being* and of *thought*, I ask, through what sense have they entered? are they luminous, or coloured, that they have entered through sight? of a grave, or acute sound, that they have entered through hearing? of a good, or bad odour, that they have entered through smell? a good, or bad flavour, that they have entered through taste? cold or hot, hard or soft, that they have entered by touch? and if it be said that they have been formed from other sensible images, it may be asked, what are those other sensible images, from which it is pretended that these ideas of being, and of thought, have been formed, and how have they been formed,—by composition, or by amplification, or by diminution, or by analogy? And if no reply can be given to these inquiries, which are so reasonable, it must be confessed that the ideas of *being* and *thought* do not, in the least, derive their origin from sense, but that the mind has the faculty of forming for itself these ideas, though it often happens that it is aroused to do this by something which strikes the sense, as a painter may be induced to make a picture, in consequence of the sum which has been promised him, without being able, on that account, to say that the painting had its origin in money.

But that which these same authors add, that the idea which we have of God takes its rise from sense, because we conceive him under the idea of a venerable old man, is a notion worthy only of the anthropomorphites, or which confounds the true ideas which we have of spiritual things with the false imaginations which we form through the bad habit of striving to imagine everything, whilst it is as absurd to try to imagine that which is not corporeal as it is to endeavour to hear colour, or to see sounds.

To refute this opinion, it is only necessary to consider that, if we had no other idea of God than that of a venerable old man, all the judgments which we form of God would be false, since they would be contrary to that idea; for we are naturally led to believe that our judgments are false, when we see clearly that they are contrary to the ideas which we have of things. And thus we could not judge, with truth, that God has no parts, that he is not corporeal, that he is everywhere, that he is invisible, since none of all this is in harmony with the idea of a venerable old man. And if God is sometimes represented under this form, it does not follow that we must have this idea of him, since in this case we could have no idea of the Holy Spirit but that of a dove, since he is represented to us in the form of a dove; or, we must conceive of God as a sound, since the sound of the name helps to awaken within us the idea of God.

It is false, therefore, that all our ideas come through sense. On the contrary, it may be affirmed, that no idea which we have in our minds has taken its rise from sense, except *on occasion* of those movements which are made in the brain through sense, the impulse from sense giving occasion to the mind to form different ideas which it would not have formed without it, though these ideas have very rarely any resemblance to what takes place in the sense and in the brain; and there are at least a very great number of ideas which, having no connection with any bodily image, cannot, without manifest absurdity, be referred to sense.

And if any one objects, that at the same moment in which we have an idea in the mind, of things spiritual, as of thought, for instance, we form some bodily image at

least of the sound which expresses it, this will not be at all opposed to what we have already proved; for that image of the sound of the thought which we imagine is not the representation of the thought itself, but only of the sound: and it helps us to conceive of it only inasmuch as the mind being accustomed, when it conceives the sound, to conceive also the thought, forms at once an idea of the thought altogether spiritual, which has no natural relation to the sound, and is connected with it by custom only. This is seen in the case of the deaf, who, having no images of sounds, have, nevertheless, ideas of their thoughts, at least when they reflect on what they think about.

CHAPTER II.

OF IDEAS IN RELATION TO THEIR OBJECTS.

ALL that we conceive is represented to our mind, either as a thing, or as a manner of a thing, or as a thing modified.

I call a *thing* that which we conceive as subsisting by itself, and as the subject of all which we conceive of it. This is otherwise termed *substance*.

I call *manner* of a thing, or *mode*, or *attribute*, or *quality*, that which, being conceived in the thing, and as not able to subsist without it, determines it to be of a certain fashion, and to be so denominated.

I call a *thing modified* when I consider the substance, as determined in a certain manner or mode.

This will be better comprehended by a few examples. When I consider a *body*, the idea which I have of it represents to me a *thing, or a substance*, because I consider it as a thing which subsists by itself, and which needs no other subject in order to exist. But when I consider that this body is *round*, the idea which I have of roundness re-

presents to me only a *manner of being* which I conceive as unable to subsist, naturally, without the body of which it is the roundness. And finally, when connecting the mode with the thing, I consider a *round body*, this idea represents to me a *thing modified.*

The names which serve to express things are called *substantive* or *absolute*, as *earth*, *sun*, *mind*, *God.* Those also which signify, primarily and directly, modes (because in this they have some relation with substances), are also called *substantive* and *absolute*, as *hardness*, *heat*, *justice*, *prudence.*

The names which signify things as modified, marking, primarily and directly, though more confusedly, the thing, and indirectly, though more distinctly, the mode, are called *adjectives* or *connotatives*, as *round*, *hard*, *just*, *prudent.*

But it must be remarked, that our mind being accustomed to know the greater number of things as modified, because it scarcely knows them except by means of the accidents or qualities which strike our sense, often divides substance, even in its essence, into two ideas, of which it regards the one as the subject, and the other as the mode. Thus, though everything that is in God is God himself, we may, nevertheless, conceive of him as an infinite being, and regard infinity as an attribute of God, and being, as the subject of that attribute. Thus we often consider man as the subject of humanity, *habens humanitatem*, and, consequently, as a thing modified. And then the essential attribute which is the thing itself, we consider as a mode, because we conceive it as in a subject. This is properly what is called abstracted from the substance, as *humanity*, *corporeity*, *reason.*

It is, nevertheless, very important to know what is truly mode, and what is so only in appearance, since one of the principal causes of our errors is the confounding the modes with substances, and the substances with modes. It is the nature, therefore, of the true mode, that we can conceive without it, clearly and distinctly, the substance of which it is the mode; and that, nevertheless, we cannot reciprocally conceive clearly the mode, without conceiving, at the same time, the relation which it has to the substance of which it is the mode, and without which it cannot natu-

rally exist; not that we cannot conceive the mode without giving a distinct and express attention to its subject, but what shows that the notion of relation to a substance is involved, at least confusedly, in that of mode, is, that we are not able to deny that relation of mode without destroying the idea which we had of it, whereas, when we conceive two things as two substances, we may deny the one of the other, without destroying the ideas which we had of each. For example, I am able clearly to conceive prudence without paying distinct attention to a man who may be prudent; but I cannot conceive prudence in denying the relation which it has to a man, or to some other intelligent nature which may have that virtue; and, on the contrary, when I have considered all that belongs to an extended substance, which is called body, as extension, figure, mobility, divisibility; and when, on the other hand, I consider all that belongs to the mind, and to substance which thinks, as thinking, doubting, remembering, willing, reasoning, I can deny of the substance extended all that I conceived of the substance which thinks, without ceasing, on that account, to conceive very distinctly the substance extended, and all the other attributes which are joined to it; and I can reciprocally deny of the substance which thinks, all that I have conceived of the substance extended, and, nevertheless, conceive very distinctly all which I had conceived of the substance which thinks. This proves, likewise, that thought is not a mode of substance extended, since extension, and all the purposes which belong to it, may be denied of thought, while we are still able to conceive thought very clearly.

It may be remarked, on the subject of modes, that there are some which may be called *internal*, because they are conceived to be in the substance, as round, square; and others which may be called *external*, because they are taken from something which is not in the substance, as loved, seen, desired, which are names taken from the actions of another,—and this is what is called in the schools *denomination externe;* and if these modes are taken from some manner in which we conceive things, they are called *second intentions.* Thus, being subject, being attribute, are second intentions, because they are modes under which we con-

ceive things, which are obtained from the operation of the mind, which has connected together two ideas in affirming the one of the other. It may be remarked, further, that there are some modes which may be called *substantial*, because they represent to us true substances, applied to other substances as their modes and manners; clothed, armed, are modes of this sort. There are others which may be called simply, *real;* and these are the true modes, which are not substances, but manners of substance. There are, finally, some which may be called *negative*, because they represent to us substance, with a negation of some mode, real or substantial.

And if the objects represented by these ideas, whether substances or modes, be really such as they are represented to us, they are called true; and if they are not such, they are false, in the way which they may be, and these are what are called in the schools *beings of reason* (entia rationis), which consist commonly in the union which the mind makes of two ideas real in themselves, but which are not truly connected together so as to form a single idea; and as when we may form to ourselves a mountain of gold, it is a being of reason, because it is composed of two ideas —of a mountain, and of gold, which it represents as united, though they are not really so.

CHAPTER III.

OF THE TEN CATEGORIES OF ARISTOTLE.

We may bring under this consideration of ideas in relation to their objects, the ten categories of Aristotle, since they are only different classes to which that philosopher chose to reduce all the objects of our thought, comprising all substances under the first, and all accidents under the nine others. They are the following:—

I. *Substance*, which is either spiritual or corporeal, &c.

II. *Quantity*, which is called *discrete* when the parts are not connected, as number; *continuous*, when they are connected, and then it is either—*successive*, as time, motion; or *permanent*, which is what is otherwise called space or extension, in length, breadth, and depth; length alone constitutes lines; length and breadth, surfaces; and the three together, solids.

III. *Quality*, of which Aristotle makes four kinds:—

The first comprehends *habits:* that is to say, the dispositions of mind or body which are acquired by repeated acts, as the sciences, virtues, vices, skill in painting, writing, dancing.

The second, *natural powers:* such are the faculties of the mind or body—understanding, will, memory, the five senses, the power of walking.

The third, *sensible qualities:* as hardness, softness, heaviness, cold, heat, colour, sound, smell, the different tastes.

The fourth, *form* or *figure:* which is the external determination of quantity, as to be round, square, spherical, cubical.

IV. *Relation*, of one thing to another, as of father, of son, of master, of servant, of king, of subject; of power to its object; of sight to that which is visible; and all which indicates comparison, as like, equal, larger, smaller.

V. *Action*, either in oneself, as walking, dancing, knowing, loving; or without oneself, as beating, falling, breaking, lighting, warming.

VI. *Passion*, to be beaten, to be broken, to be lighted, to be warmed.

VII. *Where*, that is to say, that which answers to the questions respecting place, as to be at Rome, at Paris, in his cabinet, in his bed, in his chair.

VIII. *When*, that is to say, that which answers to the

questions which relate to time; as, When did he live? A hundred years ago. When was that done? Yesterday.

IX. *Situation*, as sitting, standing, lying, before, behind, to the right, to the left.

X. *Habit*, that is to say, what we have about one for clothing, for ornament, for defence; as, to be clothed, to be crowned, to be sandalled, to be armed.

These are the ten categories of Aristotle, about which there has been so much mystery, although, in truth, they are in themselves of very little use, and not only do not contribute much to form the judgment, which is the end of true logic, but often are very injurious, for two reasons, which it is important to remark.

The first is:—That we regard the categories as something founded on reason and truth, whereas, they are altogether arbitrary, and are founded only in the imagination of a man who had no authority to prescribe a law to others who have as much right as he to arrange, after another manner, the objects of their thoughts, each according to his method of philosophising. And, indeed, there are some who have comprised, in the following distich, everything in the world which, according to the new philosophy, we are capable of considering:—

> "Mens, mensura, quies, motus, positura, figura,
> Sunt cum materia cunctarum exordia rerum."

That is to say, that these philosophers maintain that we may explain everything in nature by considering these seven things, or modes, alone.

I. *Mens*, *mind*, or the substance which thinks.
II. *Materia*, *body*, or substance extended.
III. *Mensura*, greatness or smallness of each part of matter.
IV. *Positura*, their situation in relation to each other.
V. *Figura*, their figure.
VI. *Motus*, their motion.
VII. *Quies*, their rest, or lesser motion.

The second reason which renders the study of the categories dangerous, is, that it accustoms men to satisfy themselves with words, and to imagine that they know all things when they know only arbitrary names, which form in the mind no clear and distinct idea of the things, as will be shown elsewhere.

We might here speak of the attributes of the Lullists,—*goodness*, *power*, *greatness*, &c. But, in truth, it is so ridiculous a thing to imagine, as they do, that by applying these metaphysical words to everything which is proposed to them, they could explain everything, that it does not merit even to be refuted. An author of the present time has said with great reason, that the logical rules of Aristotle serve only to prove to another that which we already know, but that the art of Lully enables us only to talk, without judgment, of that which we do not know. Ignorance would be much better than this false knowledge, which only leads us to imagine that we know what we do not; for, as St Augustine has very wisely remarked, in his book on the Utility of Faith, this disposition of mind is very blameable, for two reasons,—the one, that he who is persuaded falsely that he knows the truth, is thereby rendered incapable of being taught it,—the other, that this presumption and temerity is the mark of an ill-regulated mind. "*Opinari, duas ob res turpissimum, est: quod discere non potest qui sibi jam se scire persuasit: et per se ipsa temeritas non benè affecti animi signum est.*" For the word *Opinari*, in the purity of the Latin language, signifies that disposition of mind which consents inconsiderately to uncertain things, and thus believes itself to know what it does not. Hence it is that all philosophers agree, "*sapientem nihil opinari;*" and Cicero, blaming himself for this vice, says that he was *magnus opinator*.

CHAPTER IV.

OF IDEAS OF THINGS AND SIGNS.

When we consider an object in itself, and in its own nature, without extending the view of the mind to that which it may represent, the idea we have of it is the idea of a thing, as *of the earth, of the sun*; but when we regard a certain object only as representing another, the idea which we have of it is the idea of a sign. It is in this way that we commonly regard maps and pictures. Thus the sign contains two ideas, one of the thing which represents, another of the thing represented, and its nature consists in exciting the second by means of the first.

Various divisions of signs may be made, but we shall content ourselves here with *three*, which are of the greatest importance.

I. There are some signs which are sure, which are called in Greek τεκμήρια, such as respiration of the life of animals; and there are others which are only probable, and which are called in Greek, σημεῖα, as paleness is only a probable sign of the pregnancy of women.

The majority of rash judgments arise from our confounding these two kinds of signs, and from our attributing an effect to a given cause, when it may spring equally well from other causes, and is thus only a probable sign of that cause.

II. There are signs which are connected with things, as the expression of the countenance, which is a sign of the emotions of the mind, is connected with those emotions which it expresses; symptoms which are the sign of disease are connected with those diseases; and, to have recourse to higher examples, as the ark, a sign of the church, was connected with Noah and his children, who were the true church of that time. Thus our material temples, which are signs of the faithful, or often connected with the faith-

ful. Thus the dove, the image of the Holy Spirit, was connected with the Holy Spirit. Thus, too, the water of baptism, which is the figure of spiritual regeneration, is connected with that regeneration.

There are also signs which are separated from things, as the sacrifices of the ancient law, which are signs of the offering of Christ Jesus, were separated from that which they represented.

This division of signs enables us to establish the following maxims:—

1. That we are never able to reason certainly either from the presence of the sign to the presence of the thing signified, since they are signs of things which are absent; or from the presence of the sign to the absence of the thing signified, since they are signs of things which are present. It is, therefore, by its own nature that the sign must be judged.

2. That though a thing in one state cannot be a sign of itself in the same state, since every sign requires a distinction between the thing representing, and that which is represented, it is nevertheless very possible that a thing in a certain state may represent itself in another state; as it is very possible that a man in his chamber may represent himself preaching; and that thus the only distinction necessary between the thing signifying, and the thing signified, is that of state:—that is to say, that a thing may be in one state a thing signifying, and in another a thing signified.

3. That it is very possible that one thing may hide and reveal another thing at the same time, and that thus those who have said *that nothing is made manifest by that which hides it*, have advanced a maxim far from true; for since the same thing may be at the same time both a thing and a sign, it may obscure, as a thing, that which it reveals as a sign; thus the warm ashes hide the fire as a thing, and reveal it as a sign; thus the forms assumed by angels hide them as things, and reveal them as signs; thus the eucharistic emblems hide the body of Jesus Christ as a thing, while they reveal it as a symbol.

4. We may conclude that since the nature of the sign consists in exciting in the sense by means of the idea of

the thing signifying, that of the thing signified, that so long as that effect remains—that is to say, so long as that double idea is excited—the sign remains, even though the thing in its proper nature be destroyed. Thus it matters not whether the colours of the rainbow which God has taken as a sign that he would no more destroy the human race by a flood, be true and real, provided that our senses always receive the same impression, and that we are enabled by this impression to realise God's promise; in the same way it matters not whether the bread of the Eucharist remains in its proper nature, provided that it always excites in our sense the image of that bread which enables us to conceive in what way the body of Jesus Christ is the nourishment of our souls, and how the faithful are united to each other.

III. The third division of signs is that of natural ones, which do not depend on the fancies of men, as an image which appears in a mirror is a natural sign of that which it represents; and of others which exist only from institution and establishment, and which have only a distant relation to the thing signified, or it may be, none at all. Thus words are by institution the signs of thought, and characters of words. We shall explain, in treating of propositions, an important truth in relation to these kinds of signs, to wit, that we are able on some occasions to affirm the thing signified.

CHAPTER V.

OF IDEAS IN RELATION TO THEIR SIMPLICITY OR COMPOSITION, IN WHICH THE METHOD OF KNOWING BY ABSTRACTION OR PRECISION IS CONSIDERED.

The remark made by the way, in Chap. II., that we are able to consider a mode without making any distinct

reflection on the substance of which it is the mode, furnishes us with an opportunity of explaining what is called *Mental Abstraction.*

The limited extent of our mind renders us incapable of comprehending perfectly things which are a little complex, in any other way than by considering them in their parts, and, as it were, through the phases which they are capable of receiving. This is what may be termed, generally, knowing by means of *abstraction.*

But since things are differently compounded, and there are some which are composed of parts really distinct, as, for instance, the human body, the different parts of a number; it is in such cases very easy to conceive that our mind can apply itself to consider one part without considering another, since these parts are really distinct; and this is not even called abstraction. It is, however, even in these things so useful to consider the parts separately rather than the whole, that without this, it is scarcely possible to have any distinct knowledge. For example, what means have we of obtaining a knowledge of the human body except by dividing it into all its parts, similar and dissimilar, and giving to each of these different names? All arithmetic is founded on this,—for there is no need of art in order to reckon small numbers, since the mind is able to comprehend them all at once; thus the whole art consists in counting by parts that which we are unable to count as a whole, since it would be impossible, however comprehensive our mind might be, to multiply two numbers of eight or nine figures each, taking them all together at once.

The second knowledge by parts, is *when we consider a mode without paying attention to the substance, or two modes which are united together in the same substance, considering them each apart.* This is what is done by the geometers, who have taken as the object of their science, body extended in length, breadth, and thickness. For in order to obtain a better knowledge of it, they have first applied themselves to the consideration of it, in relation to one dimension alone, which is *length;* and they have then given to it the name of *line.* They have afterwards considered it in respect to the two dimensions of *length* and *breadth,* and have called it *surface.* And, finally, consider-

ing all three dimensions, *length*, *breadth*, and *thickness* together, they have called it *solid* or *body*.

Hence it may be seen how ridiculous is the argument of certain sceptics, who would call in question the certitude of geometry, because it supposes lines and surfaces which are not in nature; for the geometers do not suppose that there are lines without breadth, or surfaces without depth, —they suppose only that we are able to consider length, without paying attention to breadth; and this is indubitable, as when we measure the distance from one town to another, we measure only the length of the road, without troubling ourselves with its breadth.

Now, the more we are able to distribute things into different modes, the more capable does the mind become of obtaining a thorough knowledge of them; and thus we see, in relation to motion, that as long as the determination towards a certain spot was not distinguished from the motion itself, and from different parts even in the same determination, so long no satisfactory account could be given of reflection and refraction, which is now easily accomplished by that distinction, as may be seen in the second chapter of the Optics of Descartes.

The *third* way of conceiving things by abstraction is, *when a single thing, having different attributes, we think of one without thinking of another, although there may exist between them only a discrimination of reason;* and this is brought about as follows: I consider, for example, that I think, and that, consequently, it is myself that is thinking, in the idea which I have of myself thinking, I am able to confine my attention to a thing which thinks, without paying any regard to the fact that it is myself, although within me, myself and he who thinks may be only one and the same thing. And thus the idea which I have conceived of a person who thinks, will be able to represent, not myself alone, but all other persons who think. In the same way, having drawn on paper an equilateral triangle, if I confine myself to the consideration of it in the place where it is, with all the accidents which determine it, I shall have the idea of that triangle alone; but if I detach my mind from the consideration of all these particular circumstances, and consider only that it is a

figure bounded by three equal lines, the idea which I form of it will, on the one hand, represent to me more accurately that equality of lines; and, on the other, will be able to represent to me all equilateral triangles. And if, not restricting myself to that equality of lines, but proceeding further, I consider only that it is a figure bounded by three right lines, I shall form an idea which will represent all kinds of triangles. If, again, not confining myself to the number of lines, I simply consider that it is a plane surface, bounded by right lines, the idea which I form will represent all rectilineal figures; and thus, step by step, I am able to ascend to extension itself. Now, in these abstractions, we see *that the inferior degree always comprehends the superior, together with some particular determination;* as *myself* comprehends that which thinks, and equilateral triangle comprehends triangle, and triangle, rectilineal figure; but that *the superior degree, being less determinate, is able to represent a greater number of things.*

Finally, it is clear that, by these abstractions, the ideas of singular things become common, and the common, more common; and thus this gives us the opportunity of passing to what we have to say concerning ideas, considered in relation to their universality or particularity.

CHAPTER VI.

OF IDEAS, CONSIDERED IN RELATION TO THEIR GENERALITY, PARTICULARITY, AND SINGULARITY.

ALTHOUGH all things that exist be singular, we are nevertheless, by means of these abstractions which we have just explained, enabled to have many sorts of ideas, some of which only represent to us a single thing; as the idea which any one has of himself;—others being able equally well to represent many; as when any one has conceived a triangle, without considering anything else respecting it,

except that it is a figure containing three sides and three angles, the idea which he has formed of it will enable him to conceive all other triangles.

Those ideas which only represent a single thing are called *singular* or *individual*, and the things they represent *individuals;* and those which represent many individuals are called *universal*, *common*, or *general.*

The names which we employ to mark the first are called *proper*, as *Socrates*, *Rome*, *Bucephalus;* and those which are employed to mark the last, *common*, and *appellative*, as *man*, *town*, *horse;* and the universal idea, as well as the common names, may be called *general terms.*

But it must be remarked that words are general in two ways: One which is called *univocal*, which is, when they are connected with general ideas, so that the same word answers to many, both according to its sound, and according to the idea itself, with which it is connected; such are the words to which we have referred—man, town, horse. The other, which is called *equivocal*, is when the same sound has been joined by men to different ideas, so that the same sound applies to many, not according to the same idea, but according to different ideas with which it has become connected through custom. Thus the word *canon* signifies an engine of war, a decree of council, and an article of dress; but it also signifies these in relation to ideas altogether different.

This equivocal universality is, nevertheless, of two kinds. For the different ideas which are united to the same sound have either no natural relation between themselves, as in the word *canon;* or they have some connection, as when a word being principally united to an idea, we only join it to some other idea, because it has some relation of cause, or effect, or sign, or resemblance, to the first; and these kinds of equivocal words are then termed *analogous*, as when the word *healthy* (sain) is attributed to an animal, to the air, and to food; for the idea united to this word is principally *health* (santè), which applies only to an animal; but there is united to it another idea related to that, which is being the cause of health, which leads us to say that the air is healthy (sain), that food is healthy, because they contribute to the preservation of health.

When, however, we here speak of general terms, we understand the *univocal*, which are united to universal and general ideas.

Now, in these universal ideas there are two things, which it is very important accurately to distinguish—COMPREHENSION and EXTENSION. *I call the* COMPREHENSION *of an idea, those attributes which it involves in itself, and which cannot be taken away from it without destroying it; as the comprehension of the idea triangle includes extension, figure, three lines, three angles, and the equality of these three angles to two right angles, &c.*

I call the EXTENSION *of an idea those subjects to which that idea applies, which are also called the inferiors of a general term, which, in relation to them, is called superior, as the idea of triangle in general extends to all the different sorts of triangles.*

But although the general idea extends indistinctly to all the subjects to which it belongs,—that is to say, to all its inferiors, and the common name expresses them all,—there is, nevertheless, this difference between the *attributes which it comprehends* and the *subjects to which it extends, that none of its attributes can be taken away without destroying it, as we have already said; whereas we may restrict it, as to its extension, by applying it only to some of those subjects to which it agrees, without effecting its destruction by so doing.*

Now this restriction or contraction of the general idea, as to its extension, may be effected in two ways.

The *first* is, by joining to it another idea, distinct and determined; as when, to the *general idea of triangle*, I add that of having a right angle, this restricts that idea to a *single species of triangle*, which is the rectangled triangle.

The *other* is, by joining to it only an indistinct and indeterminate idea of a part, as when I say *some triangle;* the *common term* is then said to become *particular*, since it extends only to a part of these subjects to which it before extended, while it is, nevertheless, not determined what that part is, to which it is thus restricted.

CHAPTER VII.

OF THE FIVE KINDS OF UNIVERSAL IDEAS—GENUS, SPECIES, DIFFERENCE, PROPERTY, ACCIDENT.

WHAT we have said in the preceding chapters enables us to render intelligible, in a few words, the five Universals, which are commonly expounded in the schools. For, when general ideas represent to us their objects as things, and are marked by terms called substantive or absolute, they are called *genera* or *species*.

GENUS.—Those are called GENERA, *which are so common that they extend to other ideas, which are yet themselves universals;* as, *quadrilateral* is a genus in relation to parallelogram and trapezium; *substance* is a genus in relation to substance extended, which is called body,—and to substance that thinks, which is called mind.

SPECIES.—And *those common ideas which are under one more common or general are called* SPECIES; as parallelogram and trapezium are species of quadrilateral; body and mind, of substance. And thus the same idea may be a genus, when compared with other ideas to which it extends,—and a species, when compared to another which is more general. Thus body, which is a genus in relation to body animate and inanimate, is a species in relation to substance; and quadrilateral, which is a genus in relation to parallelogram and trapezium, is a species in relation to figure.

But there is another notion of the word species, which is applicable only to ideas which cannot become genera: this is the case when an idea contains under it only the individual and the singular; as *circle* has under it only individual circles, which are all of the same species. This is what is termed the lowest species (*species infima*). And there is a genus which is not a species, to wit, the highest of all genera; whether this genus be *being*, or whether it

be *substance*, is a point of little consequence, and belongs more to metaphysics than to logic.

I have said that the general ideas which represent their objects to us as things, are called genera or species; for it is not necessary that the objects of these ideas be really things and substances,—it is enough that we consider them as things, inasmuch as, even where they are modes, we do not refer them to their substances, but to other ideas of mode, more or less general; as figure, which is only a mode in relation to figured body, is a genus in relation to figures curvilineal and rectilineal, &c. And, on the contrary, those ideas which represent their objects to us as things modified, and which are expressed by terms adjective or connotative, if we compare them with the substances which these connotative terms signify confusedly, though directly (whether, in truth, these connotative terms signify essential attributes, which are, in reality, only the thing itself, or whether they signify true modes), they are not then called either *genera* or *species*, but *differences*, *properties*, or *accidents*.

They are called *differences*, when the object of these ideas is an essential attribute, which distinguishes one species from another: as *extended*, *heavy*, *reasonable*.

They are called *properties*, when their object is an attribute, which belongs, indeed, to the essence of the thing, but which is not the first we consider in that essence, but only dependent on the first: as *divisible*, *immortal*, *teachable*.

And they are called *common accidents* when their object is a true mode, which may be separated, at least, by the mind, from the thing of which it is termed the accident, without destroying in our mind the idea of that thing: as *round*, *hard*, *just*, *prudent*. This it is necessary to explain more particularly.

DIFFERENCE.—When a genus has two species, *the idea of each species must necessarily comprehend something which is not comprised in the idea of the genus, otherwise, if each contained only what is comprised in the genus, there would be only the genus; and, as the genus agrees with every species, every species would agree with each other. Thus*

the first essential attribute, that each species comprehends more than the genus, is called its DIFFERENCE, *and the idea which we have of it is a universal idea, because one and the same idea may represent to us that difference wherever we find it, that is to say, in all the inferiors of the species.*

Example.—Body and mind are two species of substance, —it is, therefore, necessary that there be something more in the idea of body than in that of substance, and also in that of mind. Now the first thing we see more in the body is extension, and the first thing we see more in spirit is thought. Thus the *difference* of body will be *extension*, and that of mind, *thought*, that is to say, body will be a substance extended, and mind a substance which thinks.

Hence we may see, in the first place, that the difference has two aspects—*one to the genus, which it divides and shares, another to the species, which it creates and constitutes*, making the chief part of that which is included in the idea of species according to its comprehension; whence it happens that all species may be expressed by a single name, as mind, body, or, by two words, viz., by that of the genus and that of its species united together. This is what is termed *definition:* as *substance extended, substance which thinks.*

We may see, in the second place, *that since the difference constitutes the species, and distinguishes it from other species, it must have the same extension as the species,*— and thus, that we must needs be able to affirm them reciprocally of each other, as everything that thinks is mind, and all that is mind, thinks.

It often, however, happens, that in certain things we do not see any attribute—such that it agrees to the whole of a species, and to nothing but that species. In this case we join several attributes together, the union of which, being only found in that species, constitutes its difference. Thus the Platonists, holding the demons to be rational animals as well as man, found that the difference, *rational*, was not convertible with man, hence they added to it another, *mortal*, which is not convertible with man either, since it agrees also with beasts; but the two together agree with man alone. And we proceed in the

same way, in the idea which we form to ourselves of the majority of animals.

Finally, it may be remarked, *that it is not always necessary that the two differences which divide a genus be both positive;* it is sufficient if one be so, as two men are distinguished from one another, if one has a commission which the other has not, though he who has not the commission may have nothing which the other has not. It is thus that man is distinguished from the beasts in general, inasmuch as man is an animal endowed with a mind,—*animal mente præditum*,—and that a beast is simply an animal —*animal merum*;—for the idea of beast, in general, involves nothing positive which may not be in man; there is only joined to it the negation of that which is in man, to wit, mind, so that all the difference which exists between the idea of *animal* and that of *brute*, is, that the *idea of animal does not involve thought in its comprehension, but does not exclude it either*, since it *includes it in its extension;* whereas, the *idea of brute excludes it in its comprehension*, and thus cannot agree with an animal that thinks.

PROPERTY.—*When we have found the difference which constitutes a species, that is to say, its main essential attribute, which distinguishes it from all other species, if, considering its nature more particularly, we discover in it some other attribute which is necessarily connected with the first, and which, consequently, agrees to the whole of that species, and to that species alone*—omni et soli—*we denominate it* PROPERTY, *and expressing it by a connotative term, we attribute it to the species as its property.* And since it agrees with all the inferiors of the species, and that the single idea which we have once formed of it will represent that property wherever we may meet with it, we make it the *fourth* of the terms common and universal.

Example.—To have a right angle is the essential difference of a rectangular triangle; and since it follows necessarily, in relation to a right angle, that the square of the side which subtends it be equal to the squares of the two sides which contain it, the equality of these squares is regarded as the property of a rectangular triangle, which is common to all rectangular triangles, and to them alone.

The word property has, however, been sometimes extended beyond this, and four species of it have been discriminated.

The *first* is that which we have explained—"*quod convenit omni, et soli, et semper*,"—as it is the property of every circle, of the circle alone, and always that the lines drawn from the centre to the circumference be equal.

The *second*—"*quod convenit omni, sed non soli*,"—as we say that divisibility is the property of extension, since anything extended may be divided, although time, number, and force, may be so also.

The *third* is—"*quod convenit soli, sed non omni*,"—as it belongs to man alone to be a physician or a philosopher, though all men may not be so.

The *fourth*—"*quod convenit omni et soli, sed non semper*," —an example of which is given in the changing of colour of the hair to grey—*canes cere*—which is common to all men, and to men alone, but only in old age.

ACCIDENT.—We have already said, in the second chapter, that what is called a mode is that which can only exist naturally, by means of a substance, and which is not necessarily connected with the idea of a thing, so that we can easily conceive the thing without conceiving the mode, as we can easily conceive a man without conceiving that he is prudent; but we cannot conceive prudence without conceiving either a man or some other intelligent nature, which may be prudent.

Now, when we connect a confused and indeterminate idea of substance with a distinct idea of some mode, that idea is capable of representing anything in which the mode can exist: as the idea of prudent, all prudent men,—the idea of round, all round bodies; and then this idea, expressed by a connotative term—*prudent, round*—makes the *fifth universal*, which we call *accident*, since it is not *essential* to the thing to which it is attributed; for, if it were, it would be *difference* or *property*.

But it must be noticed here, as we before said, that when we consider two substances together, we may regard one as a mode of the other. Thus a man dressed may be considered as a whole made up of the man and his dress;

but to be dressed is, in relation to the man, only a mode or phase of existence under which we regard him, although the parts of the dress may be themselves substances. And thus *to be clothed* is simply a fifth universal.

This is more than sufficient touching the five universals, which are treated at such length in the schools. For it is of very little consequence to know that there are genera, species, differences, properties, and accidents; the main thing is to recognise the true genera of things, the true species of each genus, their true differences, their true properties, and the accidents which may be attributed to them. On this matter we shall throw some light in the following chapter, after having, first of all, said something of complex terms.

CHAPTER VIII.

OF COMPLEX TERMS, AND THEIR UNIVERSALITY OR PARTICULARITY.

We sometimes join to a term various other terms, which, together, constitute in our minds a total idea; and it often happens that we can affirm or deny of the whole, what we could not affirm or deny of the terms taken separately: Examples of complex terms are—a *prudent man*, a *transparent body*, *Alexander the son of Philip*.

This addition is often made by the relative pronoun, as if I say:—*A body* WHICH *is transparent*; *Alexander*, WHO *is the son of Philip*; *the Pope*, WHO *is the vicar of Jesus Christ*. We may, indeed, say, that though the relative be not always expressed, it is always in some sort understood, since it may be expressed, if we will, without changing the proposition; for it is the same thing to say,—a body transparent, or a body which is transparent.

What is most worthy of remark in these complex terms

is, that the addition which we make to a term is of two kinds,—one which we call *explicative;* the other, *determinative.*

This addition may be termed simply EXPLICATIVE, *when it only develops what is involved in the comprehension of the idea of the first term, or, at least, what agrees with it as one of its accidents,* provided it agrees with it generally, and in the *whole of its extension:* as when I say, *Man, who is an animal endowed with reason;* or, *Man, who naturally desires to be happy;* or, *Man, who is mortal.* These additions are only explicatives, since they do not change at all the total idea of the word *man,* or restrict it to signify only a part of man, but mark only what belongs to all men.

All the additions which are made to names, which distinctly *mark out an individual,* are of this sort: as when we say, *Paris, which is the largest city of Europe; Julius Cæsar, who was the greatest commander the world ever saw; Aristotle, the prince of philosophers; Louis XIV., King of France.* For individual terms, distinctly expressed, are always taken in *all their extension,* having been *determined* as far as possible.

Another kind of addition, which may be called DETERMINATIVE, is, when *that which is added to a general word restricts its signification, and causes that general word to be taken no longer in all its extension,* but only in *some part of that extension:* as when I say, *transparent bodies, learned men, reasonable animal.* These additions are not simply *explications,* but *determinations,* since they restrict the extension of the first term, causing the word body to signify only *some part* of bodies; the word man, only *some part* of men; the word animal, only *a part* of animals.

And these additions are sometimes such, that they render a general word *individual,* when there are added to it individual conditions: as, when I say, *The Pope who now is,* this determines the general word pope to the single person of Alexander VII.

We may distinguish two kinds of complex terms,—one in the *expression,* and the other in the *meaning* alone. The first are those whose addition is expressed, such as all the examples to which we have heretofore referred.

The last are those, one of whose terms is not expressed, but understood simply: as when we say, in France, *The king*, it is a complex term in meaning, because we have in our minds, in pronouncing the word king, not only the general idea which answers to that term, but we mentally add thereto the idea of Louis XIV., who is now king of France. There are a multitude of terms in the ordinary discourse of men which are complex in this way,—as the name of *master* in each family, &c.

There are words, even, which are complex in expression on one account, and also in meaning on another: as when we say, *The prince of philosophers*, there is a complex term in the expression, since the word prince is determined by that of philosopher; but in relation to Aristotle, who is denoted in the schools by this word, it is complex in meaning only, since the idea of Aristotle is in the mind alone, without being expressed by any sound which distinguishes him in particular.

All *connotative or adjective terms* are either *parts of a complex term*, when their substantive is *expressed*, or are *complex in meaning*, when it is *understood;* for, as was said in Chapter II., these connotative terms denote, *directly, though more confusedly, a subject*,—and *indirectly, though more distinctly, the form or mode;* and thus the subject is only an idea very general and confused, sometimes of a being, sometimes of a body, which is more commonly determined by a distinct idea of the form which is joined to it: as, *album* signifies a thing which has whiteness, which determines the confused idea of a thing to represent those only which have that quality.

But what is more remarkable in these complex terms is, that there are some which *are determined, in reality, to a single individual*, and which still preserve a certain *equivocal universality*, which may be called an equivocation through mistake, because men, still agreeing that the term signifies only a single thing, for want of clearly discriminating what that single thing really is, apply it, some to one thing, some to another, which makes it necessary for it to be still determined, either by various circumstances or by what follows, in order that we may know exactly what it means. Thus the word *true religion*

signifies a single and unique religion, which is in reality the Catholic, it being the only one which is true. But since each body and each sect believes that its own religion is the true one, this word is very equivocal, though by mistake, in the mouths of men. And when we read in a history that a prince was zealous for the true religion, we cannot say what was intended thereby, unless we know what was the religion of the historian; for, if he was a Protestant, it would mean the Protestant religion; if it was a Mohammedan Arab, who spoke thus of his prince, it would refer to the Mohammedan religion; and we could not determine that it was the Catholic religion unless we knew that the historian was a Catholic.

The *complex terms which are thus equivocal through mistake*, are principally those which involve *qualities* of which the *senses do not judge*, but the *mind only*, on which men may easily have different opinions. If I say, for example, that only men of six feet high were enrolled in the army of Marius, the complex term, *men of six feet*, is not liable to the equivocation through mistake, since it is very easy to measure *men*, in order to determine if they are six feet; but if it had been said that only valiant men should be enrolled, the term *valiant men* would have been more subject to the equivocation through mistake, that is to say, to be attributed to those men who were thought to be valiant, and were really not so.

The *terms of comparison are also very subject to become equivocations through mistake*:—the greatest geometer of Paris—the most learned man—the most dexterous —the richest; for though these terms may be determined by individual conditions, there being only one man who is the greatest geometer in Paris, that word may, nevertheless, be easily attributed to many, though it belongs only in reality to one, because it is very easy for men to be divided in opinion on this subject, and that thus each will give that name to the man whom he believes to be superior to the others.

The words, *meaning of an author—doctrine of an author on such a subject*—are also of this number, especially when an author has been so wanting in clearness, as to render it a matter of dispute what his opinion was, as we see the

philosophers continually dispute about the opinions of Aristotle, each dragging him to his own side; for though Aristotle had only a single and unique sense on a given subject, nevertheless, as he is differently understood, these words, *opinion of Aristotle*, are equivocations through mistake, because each calls the opinion of Aristotle that which he understands to be his true opinion; and thus, one understanding one thing, and another another, the terms, *opinion of Aristotle on such a subject*, however individual they may be in themselves, will belong to many things, viz., to all the different opinions which may be attributed to him,—and they will express in the mouth of each person that which each may conceive to be the opinion of that philosopher.

But in order to understand better in what consists the equivocations in these terms, which we have called equivocations through mistake, it must be remarked that *these words are connotatives, either expressly or in signification.* Now, as we have already said, *we ought to consider, in connotative words, the subject which is directly, but confusedly expressed*, and the *form or mode which is distinctly, though indirectly, expressed.* Thus white signifies a body, confusedly; and whiteness, distinctly. Opinion of Aristotle signifies, confusedly, some opinion, some thought, some doctrine; and distinctly, the relation of that thought to Aristotle, to whom it is attributed. Now when there happens any equivocation in these words, it is not properly because of this form or mode, which, being distinct, is invariable; nor is it because of the subject confused, when it remains in that confusion. For example, the expression *prince of philosophers* can never be equivocal, so long as this idea—*prince of philosophers*—is not applied to any individual distinctly known; but the equivocation happens solely because the mind, in the place of that subject confused, often substitutes a subject distinct and determinate, to which it attributes the form and mode; for, since men have different opinions on this subject, they may give that quality to different persons, and denote them afterwards by this word, which they believe belongs to them, as formerly Plato was known by the name of prince of philosophers, and now Aristotle.

The expression, *true religion*, not being connected with the distinct idea of any particular religion, and remaining in its confused idea, is not equivocal, since it signifies only that which is in fact the true religion. But when the mind has joined that idea of true religion to a distinct idea of a given particular form of worship distinctly known, that expression becomes very equivocal, and signifies, in the mouth of each body, the form of worship which it considers as the true.

It is the same, also, with these words—*opinion of such a philosopher on such a subject*—for, remaining in their general idea, they signify, simply and generally, the doctrine which this philosopher had taught on that subject, as that which Aristotle taught on the nature of the soul—*id quod sensit talis scriptor*—and this *id*, that is to say, this doctrine, remaining in its confused idea, without being applied to a distinct idea, these words are not at all equivocal; but when, in place of that *id* confused, of that doctrine confusedly conceived, the mind substitutes a distinct doctrine and a distinct subject, then that term will become equivocal, according to the various distinct ideas which may be substituted for it. Thus the opinion of Aristotle, touching the nature of the soul, is an equivocal expression in the mouth of Pomponacius, who maintained that he believed it mortal; and in the mouths of many other interpreters of that philosopher, who maintained, on the contrary, that he believed it immortal, as well as his masters, Plato and Socrates. And hence it happens that these kind of words may often express a thing to which the form, indirectly expressed, does not belong. Supposing, for example, that Philip had not been really the father of Alexander, as Alexander himself wished to have it believed, the expression, *son of Philip*, which signifies, generally, one who was begotten by Philip, being applied through mistake to Alexander, would signify a person who was not truly the son of Philip.

The expression, *sense of Scripture*, being applied by a heretic to an error contrary to Scripture, would signify, in his mouth, that error which he believes to be the sense of Scripture, and which he will, in that opinion, call sense of Scripture. Hence the Calvinists are not more Catholic

for protesting that they follow only the Word of God, for these words—*Word of God*—signify, in their mouth, all the errors which they falsely take to be the Word of God.

CHAPTER IX.

OF THE CLEARNESS AND DISTINCTNESS OF IDEAS AND OF THEIR OBSCURITY AND CONFUSION.

We may distinguish, in any idea, the *clearness* from the *distinctness*, and the *obscurity* from the *confusion*; for we may say that an idea is *clear when it strikes us sensibly*, though it may not be distinct,—as the *idea of pain strikes* us *very sensibly*, and on that account may be called *clear*, and yet it is very *confused*, since it *represents pain to us*, as *in the hand* which is wounded, although it is *only in the mind*. We may, nevertheless, say, that every idea is distinct, in so far as it is clear, and that the obscurity arises only from the confusion: as, in the case of pain, the single sensation which strikes us is clear, and is also distinct; but what is confused, *i. e.*, that the sensation is in our hand, is not clear to us.

Taking, therefore, as the same thing, the clearness and distinctness of ideas, it is of great importance to examine how the one are clear and the other obscure. But this will be known better by examples than by any other way; and we may develop the principles of those ideas which are clear and distinct, and the principles of those which are confused and obscure. The idea which each has of himself, as *something that thinks*, is very clear; and, in this way, also, the idea of everything which depends on our thought, as *judging*, *reasoning*, *doubting*, *wishing*, *desiring*, *feeling*, *imagining*. We have also very clear ideas of substance extended, and that which belongs to it, as figure, motion, rest; for though it is possible for us to pretend that we have no idea either of body or figure, which we

cannot pretend of the substance which thinks, so long as we are thinking—yet we are not able to hide from ourselves, that we conceive clearly of *extension* and *figure*.

We conceive, also, clearly—*being*, *existence*, *time*, *order*, *number*—provided we consider only that the duration of each thing is a mode, or phase, under which we consider that thing, so long as it continues to be.; so that thus *order* and *number* are not different in fact from the things which are ordered and numbered. All these ideas are so clear, that, often wishing to make them more clear, and not being satisfied with those which we form naturally, we obscure them. We may say, also, that the idea which we have of God, in this life, is clear in one sense, though it may be obscure and very imperfect in another. It is clear, since it suffices to reveal to us in God a very great number of attributes which, we are assured, can be found in God alone; but it is obscure, if we compare it with that which the blessed in heaven have of Him; and it is imperfect, in that our mind, being finite, is able to conceive an infinite object only very imperfectly. But the conditions of an idea's perfection are different from those of its clearness, for it is perfect when it represents to us all that is in its object, and it is clear when it represents to us enough for forming a clear and distinct conception of it.

Confused and *obscure ideas* are those which we have of *sensible qualities*, as of *colour*, of *sound*, of *smell*, of *taste*, of *cold*, of *heat*, of *weight*, &c.; as also of our *appetites*, of *hunger*, of *thirst*, of *bodily pain*, &c.; and we may explain the cause of confused ideas as follows:—As we have been children before we were men, and as external things have acted on us, causing different sensations in our mind, by the impressions which they made on our body, the mind, which sees that it was not through its own will that these sentiments were excited in it, but that it had them only in connection with certain bodies, as when it was conscious of heat in approaching the fire, was not satisfied with judging therefrom that there was something without it which had been the cause of these sensations, in which it would not have been deceived; but it has gone further in believing, that what was in these objects was perfectly like the sensations, or ideas, which were excited on occasion of

them,—and from these judgments it has formed ideas of them, by transferring the sensations of heat, of colour, &c., to the things themselves, which are without it. And these are those confused and obscure ideas which we have of sensible qualities, the mind having added its false judgments to that which nature reveals to it.

And as these ideas are not natural but arbitrary, there is great inconsistency amongst them; for though *heat* and *burning* are only two sensations,—one feebler, and the other stronger,—we have placed *heat in* the fire, and we have said that the fire has heat, but we have not placed there *burning*, or the pain which is felt on approaching too near it; neither have we said that the fire has *pain*. But though men have seen clearly that pain is not in the fire which burns the hand, they have still been deceived in believing that it is *in the hand* that the fire *burns*, whereas, when considered aright, it is *only in the mind*, although *on occasion* of what takes place in the *hand*, since pain of body is nothing else but a feeling of aversion which the mind conceives at some movement contrary to the natural constitution of its body.

This has been confessed, not only by some ancient philosophers, as the Cyrenaics, but also by St Augustine in several places. "Those pains," says he (in the xiv. book of the "City of God," cap. 15), "do not arise from the body, but from the mind, which is in the body and on account of the body. *Dolores qui dicuntur carnis, animæ sunt in carne, et ex carne;* for pain of body," he adds, "is nothing else but a grief of mind on account of its body, and the opposition to that which has been done in the body, as the pain of mind, which we call sorrow, is the opposition which the mind feels to those things which happen contrary to its pleasure. *Dolor carnis tantum modo offensio est animæ ex carne, et quædam ab ejus passione dissensio; sicuti animæ dolor, quæ tristitiæ nuncupatur, dissensio est ab his rebus, quæ nobis nolentibus acciderunt.*" And in the vii. book of Genesis, in the note, cap. 19, the repugnance which the mind feels at seeing that the action through which it governs the body is impeded by some disturbance which is made in its temperament, is what is called pain. "*Cum afflictiones corporis moleste sensit (anima) actionem suam, quâ*

illi regendo adest, turbato ejus temperamento impedire offenditur et hæc offensio dolor vocatur."

In fact, that which shows us that the pain which we call corporeal *is in the mind*, not *in the body*, is, that the same things which occasion us pain when we think of them, cause none when our mind is strongly occupied elsewhere, as that priest of Calamis, in Africa, of whom St Augustine speaks in the xiv. book of the "City of God," cap. 24, who, as often as he wished, could so alienate himself from sense that he would remain as though dead, and not only was not conscious when they pinched or pierced him, but even when they burnt him. "*Qui quando ei placebat, ad imitatas quasi lamentantis hominis voces, ita se auferebat a sensibus, et jacebat simillimus mortuo, ut non solum vellicantes atque pungentes minime sentiret, sed aliquando etiam igne ureretur admoto, sine allo doloris sensu, nisi post modum ex vulnere.*"

It must be remarked, further, that it is not properly the injured state of the hand, and the change which the burning causes in it, which makes the mind conscious of pain, but that that movement must be communicated to the brain by means of the small fibres contained in the nerves, as in tubes, which are extended as small threads from the brain to the hand and the other parts of the body, so that when these small fibres are stirred, that part of the brain also, whence they derive their origin, is agitated; and this is why, if any obstruction prevents these threads of nerves from communicating their movement to the brain, as is the case in paralysis, a man may see his hand cut and burnt without being conscious of any pain; and, on the contrary, what appears strange enough, he may have what is called pain in the hand without possessing a hand at all, as it happens very often to those who have their hand cut off, because the fibres of the nerves which extended from the hand to the brain, being excited by some movement about the elbow, where they terminated when the arm was cut off, are still able to affect that part of the brain to which they are attached in the same manner as before, when they extended down to the hand, as the extremity of a cord can be agitated in the same way by pulling it at the middle as at either end. And this it is which causes the mind to feel the same pain then, as it felt when the limb was perfect,

because it excites its attention, at the place in the brain whence the movement was accustomed to come, as what we see in a mirror appears to us in the place where it would have been, if it had been seen by direct rays, because that is the most common manner of viewing objects.

And this will enable us to show how very possible it is that a mind separated from the body may be tormented by fire either of hell or of purgatory, and that it may feel the same pain as we feel when we are burnt, since, even when it was in the body, the pain of the burning was in *it*, and not in the body, and was, indeed, nothing else but a thought of sadness which it felt on occasion of what happened in the body to which God had united it. Why, therefore, may we not conceive that the justice of God may so dispose a certain portion of matter in regard to a mind, as that the movement of that matter may be an occasion to that mind of afflictive thoughts, which is all that can happen to our minds in corporeal pain?

But to return to *confused ideas*. That of *weight*, which seems so clear, is no less confused than the others of which we have to speak, for children, seeing that stones and such like things fall to the ground as soon as they ceased to hold them, have formed from this the idea of a thing that falls, which idea is natural and true, and further, of some cause of that fall, which is also true. But because they see nothing but the stone, and not that which impels it, by a hasty judgment they have concluded that what they saw not, was not, and that thus the stone fell of itself by an inward principle, without there being anything else to impel it downward, and it is to this confused idea, which arose only from their error, that they have attached the name of *gravity*, or *weight*.

For, as they have seen stones which fall down towards the earth of themselves, they have seen also straws which move towards amber, and small pieces of iron or steel, which move towards the magnet. They have, therefore, as much reason to place a quality in the straws and in the iron, which moves them towards the amber or the magnet, as in the stones to move them towards the earth. Nevertheless, they have not chosen to do so; but they have placed in amber a quality for attracting straws, and one

in the magnet for attracting iron, which they have called attractive qualities, as if it would not have been just as easy for them to have placed in the earth such a quality for attracting heavy things. But be that as it may, these attractive qualities arise only in the same way as that of weight, from a false reasoning which has led men to believe that it must be that the magnet should attract iron, because they saw nothing which impelled the magnet towards it, although it is impossible to conceive that one body is able to attract another, if the body which attracts is not moved itself, and if that which is attracted is not joined or attached to it by some link.

We ought also to refer to these judgments of our youth the idea which represents to us *hard and heavy things* as more *solid* and *material* than those which are light and delicate, which leads us to believe that there is much more matter in a box full of gold than in another which is only full of air; for these ideas arise simply from our having, in our youth, judged of all external things only in relation to the impression which they made on our senses; and thus, because hard and heavy bodies acted more powerfully on us than light and subtile bodies, we have imagined that they contain more matter; whereas reason ought to lead us to the conclusion, that since each part of matter never occupies more than its own space, an equal space is always filled with the same quantity of matter.

So that a vessel of a cubic foot does not contain more when filled with gold, than when filled with air; and it is even true, in one sense, that when filled with air, it contains more solid matter, for a reason which it would be too long to explain here.

We may say that it is this imagination which produces all the extravagant opinions of those, who have believed that *our mind* was either a *very subtile air composed of atoms*, as Democritus and the Epicureans, or *a fiery vapour*, as the Stoics, or a portion *of heavenly light*, as the ancient Manicheans, and Fludd even in our time, or a *fine air*, as the Socinians; for none of these persons would ever have believed that a stone, or wood, or mire, were capable of thinking; and this is why Cicero, while he holds, with the Stoics, that our mind is a subtile flame, rejects, as an

untenable absurdity, the idea that it could be of earth, or a gross air: *Quid enim, obsecro te; terrane tibi aut hoc nebuloso, aut caliginoso cœlo, Sata aut concreta esse videtur tanta vis memoriæ!* But they believed that, in subtilising this material, they rendered it less gross, less material; and that at length it might become capable of thinking, which is a ridiculous fancy. For one matter is not more subtile than another, except that, in being divided into parts smaller and more agitated, it makes, on the one hand, less resistance to other bodies, and, on the other, more easily insinuates itself into their pores; but, divided or not divided, agitated or not agitated, it is not on that account less material, or less corporeal, or more capable of thinking; since it is impossible to imagine that there is any relation between the motion, or figure of matter, subtile or gross, with thought; or that a matter which did not think when it *was in* repose, as the earth, or in moderate motion, as the water, could come to know itself when agitated somewhat more, and had received three or four additional boilings.

We might extend this subject much further, but this is sufficient to enable us to understand all other confused ideas, which almost all of them arise from some causes similar to those which we have mentioned. The only way of remedying this inconvenience is, to throw aside the prejudices of our youth, and to believe nothing which is within the province of that reason through which we have judged of it before, but only through that which we judge of it now. Thus we shall arrive at natural ideas; and in relation to those which are confused, we shall retain something clear: as, that in the fire there is something which is the cause of our feeling warmth, and that all things which are called heavy are impelled downwards by some cause,—determining nothing as to what the cause may be, which, in the fire, occasions this feeling in us—or in the stone, which makes it fall to the earth,—unless we have clear reasons, affording us the knowledge of these things.

CHAPTER X.

SOME EXAMPLES OF OBSCURE AND CONFUSED IDEAS TAKEN FROM MORALS.

We have, in the preceding chapter, referred to various examples of those confused ideas which may also be called *false*, for the reason that we stated; but since they are all taken from *physics*, it may be useful to add to them a few others, taken from *morals:* the false ideas which we form in relation to good and evil being infinitely more dangerous than any others.

Whether a man has an idea, false or true, clear or obscure, of ponderosity, of sensible qualities, and of the actions of sense, he is *not, on that account, either more happy or miserable;* if he be a little more or less learned, he is not, on this account, either a better or a worse man.

Whatever opinion we may have of all these things, they will not change on our account; their existence is independent of our knowledge, and the conduct of our life is independent of the knowledge of their existence;—thus every one is allowed to refer these things to what we shall know of them in another life, and to repose, generally, for the order of the world, on the goodness, and wisdom, of Him who governs it.

But no one can dispense with the forming of judgments on those things which are good and evil, since it is by these judgments that we ought to conduct our life, regulate our actions, and render ourselves happy or miserable for eternity; and since the false ideas which we have of all these things are the sources of the wrong judgments which we form of them, it will be infinitely more important to apply ourselves to know and to correct these, than to correct those which the rashness of our judgments, or the prejudices of our youth, have led us to conceive in relation to natural things, which are the objects of barren speculation only.

In order to unfold these, it would be necessary to go through a complete course of morals; but we intend, here, only to give some examples of the manner in which they are formed, in joining together a great number of different ideas which are not connected in reality, of which we make those vain phantoms after which men run, and by which they are rendered miserable all their lives.

Man finds in himself the *idea of happiness and misery;* and this idea is neither false nor confused so long as it remains general. He has also ideas of smallness and greatness, of baseness and excellence; he desires happiness, he shuns misery; he admires excellence, he despises baseness.

But the corruption of sin, which separates him from God, in whom alone he can find his true happiness, and to whom alone, therefore, he ought to attach the idea of it, causes him to connect it with a multitude of things, into the love of which he is precipitated, in order to seek there that happiness which he had lost; and hence it is that he forms a multitude of obscure and false ideas, in representing to himself all the objects of his love as able to render him happy, and those which deprive him of them, as rendering him miserable. In the same way, he has lost, through sin, true greatness and true excellence; and thus he is constrained, in order to love himself, to represent to himself another, which is not so in reality,—to hide from himself his misery and his poverty, and to include in his idea of happiness a great number of things entirely separated from it, to the end that he may glorify himself and become great; and the ordinary course of these false ideas is as follows:—

The first and principal tendency of concupiscence is towards the pleasures of sense which arise from certain external objects; and when the mind perceives that the pleasure which it loves comes to it from these things, it immediately connects with them the idea of good, and that of evil to what deprives it of them;—then, seeing that riches and human power are the common means of enabling it to possess the objects of its desire, it begins to consider them as great goods; and, consequently, considers the rich and the great, who possess these things,

happy,—and the poor, who are deprived of them, miserable.

Now, since there is a certain excellence in happiness, the soul never separates these two ideas, and it considers always as great those whom it reckons to be happy, and as small those whom it considers poor and miserable; and this is the reason of the contempt which is shown to the poor, and the honour which is done to the rich. These judgments are so unjust and false, that St Thomas believes that it is this respect and esteem for admiration that is condemned so severely by the apostle St James, when he forbids the giving of a seat more elevated to the rich than to the poor in religious assemblies; for that passage cannot be understood to the letter as a reproof for rendering a certain external respect to the rich rather than to the poor, since the order of the world, which religion does not disturb, allows these preferences, and even saints themselves have practised it; it appears that we ought to understand it as that inward preference which causes us to regard the poor as under the feet of the rich, and the rich as infinitely superior to the poor.

But though these ideas and these judgments, which arise in the soul, are false and unreasonable, they are, nevertheless, common to all men who have not corrected them, since they are produced through the concupiscence by which they are all infected. And hence it happens that we not only form these ideas of rich men, but we know also that others have for them the same feelings of respect and admiration; so that we consider their state not only surrounded with all pomp, with all the advantages which are connected therewith, but also with all those favourable judgments which we have formed of riches, and which we know by the common discourse of men, and by our own experience.

It is properly this phantom, composed of all the admirers of the rich and of the great, which we conceive surrounds their throne, and regards them with sentiments of inward fear, of respect, and of abasement, which makes the idol of the ambitious, for which they labour all their life long, and expose themselves to so many dangers.

And to show what it is they seek after and worship, it

needs only to be considered, that if there were in the world only one man who thought, and that all the rest of those who had the human figure were only automatons, and that, moreover, this single reasoning man, knowing perfectly that all the statues which resembled him outwardly were entirely deprived of reason and thought, knew, nevertheless, the secret of moving them by certain springs, and of obtaining from them all the services which we obtain from men,—we could believe that he would sometimes divert himself with the various movements of these statues; but certainly he would never place his pleasure and his glory in the outward reverence which he would gain to himself through them, he would never be flattered by their homage, and he would even weary of them, as one wearies of puppets; so that he would commonly content himself with obtaining the services which were necessary to him, without caring to amass a greater number than he had need of for his own use.

It is not, therefore, the simple outward effects of the respect of men, separated from the consideration of their thoughts, which constitute the objects of love to the ambitious; they wish to command men, not automatons, and their pleasure consists in seeing those movements of fear, of awe, and of admiration, which they excite in others.

Hence we see that the idea which fills them is as vain and as groundless as that of those who are properly called vain men, who are those which delight themselves with flatteries, acclamations, titles, and other things of that nature. The only thing which distinguishes is the difference of the feelings and judgments which they delight in exciting; for, whereas vain men make it their aim to excite feelings of love and respect for their knowledge, their eloquence, their genius, their address, their goodness, —the ambitious wish to excite emotions of terror, of respect, and of awe, for their greatness, and of ideas conformed to these opinions, by which men regard them as terrible, exalted, mighty;—thus the one and the other place their happiness on the *thoughts* of others; but the one chose certain thoughts—the other, others.

There is nothing more common than to see these vain phantoms, composed of the false judgments of men, give

rise to the greatest enterprises, and serve as the principal object through the whole course of men's lives.

That *bravery*, so esteemed in the world, which makes those who are considered brave rush without fear into the greatest dangers, is often only the effect of the impression made by vain and empty ideas which fill their minds.

Few persons seriously despise life, and those who appear to face death at the breach or in the battle, tremble as others, or often more than others, when it attacks them in their bed.

But that which produces the bravery which they manifest on such occasions, is, that they regard, on the one hand, the raileries which come to the coward, and, on the other, the flatteries which are given to valiant men; and that double phantom occupies their attention, and diverts them from the consideration of dangers and death.

And this is the reason why those who have reason to believe that men look at them, being more filled with the thought of these opinions, are more valiant and more noble. Thus captains have commonly more courage than soldiers, and gentlemen than those who are not so, because, having more honour to lose than to get, they are also more sensibly affected by it. The same labours, said a great captain, are not equally painful to a general of an army and to a soldier, because a general is sustained by the judgments of a whole army, who have their eyes upon him, whereas a soldier has nothing to sustain him but the hope of a small reward, and the insignificant reputation of a good soldier, which often does not extend beyond his own company.

What is it which those propose to themselves who build magnificent houses far beyond their condition or their fortune? It is not simply convenience which they seek in this,—their excessive magnificence is a hindrance rather than any help to this, and it is clear that if they were alone in the world they would never take that trouble, or if they believed that those who saw their houses would view them only with feelings of contempt. It is, therefore, for men that they labour, and for the men who shall praise; they imagine that all those who look upon their palace will conceive emotions of respect and admiration for him who

is the master of it; and thus they represent themselves as in the midst of their palace, environed by a crowd of people who, from below, regard them as high above them, and who judge them great, powerful, happy, magnificent; and it is for this idea, which fills them, that they put themselves to so much expense, and take so much trouble. And why is it, we may ask, that men load their carriages with such a number of servants? It is not for the services which they render, for they inconvenience rather than help them; but it is to excite as they go, in those who behold them, the idea that a person of great state is passing; and the consideration of this idea, which they imagine may be formed in viewing their carriages, satisfies the vanity of those to whom they belong.

In the same way, if we examine all the states, all the employments, and all the professions which are esteemed in the world, we shall find that that which renders them agreeable, and that which recompenses the troubles and the fatigues which accompany them, is, that they present frequently to the mind the idea of emotions of respect, of esteem, of fear, of admiration, which others have for us.

On the contrary, that which renders solitude wearisome to the majority of men is, that being separated from the company of men, they are also separated from their judgments and thoughts. Thus their heart remains empty and famished, being deprived of this usual nourishment, and not finding ought in themselves to supply the void. And it is on this account that pagan philosophers have considered a solitary life insupportable; so that they have not hesitated to say that their wise men would not possess every possible good of mind and body, on the tenure of living alone, and never speaking with any one of his happiness. It is only the christian religion which has been able to render solitude agreeable, since, leading men to despise these vain ideas, it gives them, at the same time, other objects more fitted to occupy their minds, and more worthy to fill their hearts, for which they have no need of the society of, or intercourse with men.

But it is necessary to remark that the love of men does not properly terminate in the knowledge of the thoughts

and the feelings of others, but that they employ these only to aggrandise and heighten the idea which they have of themselves, in joining to it, and incorporating with it, all these extraneous ideas; and they imagine, by a gross illusion, that they are really greatest, because they dwell in the greatest house, and because they have there more people who admire them; although all these things which are without them, and all these opinions of other men, add nothing to them—leaving them as poor and miserable as they were before.

We may hence discover what it is that renders many things pleasant to men, which appear to have nothing in themselves which would be capable of diverting or of pleasing them; for the reason of the pleasure they take in such things is, that the idea of themselves which is represented to them is greater than is common, by some vain circumstance which they have added to it. We take pleasure in speaking of the dangers through which we have passed, because we represent to ourselves, by means of these accidents, an idea which makes us appear, either as prudent, or as particular favourites of God. We love to speak of diseases of which we are cured, because we represent ourselves as having strength enough to resist the greatest evils.

We desire to obtain advantage in every thing, and even in games of chance, in which there is no skill, even when we do not play for gain, since we join to the idea of success that of happiness; it seems as though fortune had made choice of us, and that we had become her favourites, in consequence of our merit. We even conceive this pretended good fortune as a permanent quality, which may give us the right to hope for the same success in future; and hence it is, there are some whom players choose, and with whom they love rather to connect themselves than with others, which is perfectly ridiculous; for we may say well enough, that a man has been successful up to a certain moment, but for the moment after there is no greater probability, on that account, that he will be so, than those who have been less fortunate.

Thus the mind of those who love only the world has for its object only vain phantoms, which miserably amuse and

occupy it; and those who have the reputation of being wiser, only fill themselves, even as others, with illusions and dreams. Those alone who join their life and actions to eternal things can be said to have a substantial object, real and material; it being true with regard to all others, that they love vanity and nothingness, and that they run after falsity and error.

CHAPTER XI.

OF ANOTHER CAUSE WHICH INTRODUCES CONFUSION INTO OUR THOUGHTS AND DISCOURSES, WHICH IS, THAT WE ATTACH THEM TO WORDS.

We have already said that the necessity which we have for employing outward signs in order to make ourselves understood, causes us so to attach our ideas to words, that we often consider the words more than the things. Now this is one of the most common causes of the confusion of our thoughts and discourse.

For it must be remarked, that though men have often different ideas of the same things, they employ, nevertheless, the same words to express them; as the idea which a pagan philosopher has of virtue is not the same as that which a theologian has of it, while, nevertheless, each expresses his idea by the same word, *virtue*.

Further, the same men, in different ages, have considered the same things in very different ways, and have, nevertheless, always collected these various ideas under a single name; so that, on pronouncing that word, or in hearing it pronounced, we are easily perplexed, sometimes taking it for one idea, sometimes for another. For example, man having perceived that he had in him something, whatever it might be, which effected his nourishment and growth, called this *soul*, and extended that idea to

what resembled it, not only in animals, but even in plants. And having further seen that he thought, he further called by the name of *soul* that which was the principle of thought within; whence it has happened, that through that resemblance of name, he has taken for the same thing that which thought, and that which caused the body to be nourished and to increase. In the same way, the word *life* has been applied equally to that which is the cause of animal activity, and to the thinking principle, which are two things utterly different in their nature.

In the same way, there is much of equivocation in the words *sense*, and *sensations*, even when these words are taken only in relation to the five bodily senses; for three things commonly take place in us when we use our senses, as when, for instance, we see anything. The first is—that certain movements are made in the bodily organs, as the eye and the brain; the second—that these movements give occasion to our mind of conceiving something, as when following from the movement which is made in our eye, by the reflection of light in the drops of rain opposite the sun, it has the ideas of red, of blue, and of orange; the third is—the judgment we form of that which we see, as of the rainbow, to which we attribute these colours, and which we conceive of a certain size, of a certain figure, and at a certain distance. The first of these three things is in our body alone; the two others only in our soul, although on occasion of what passes in the body; and we nevertheless comprehend all three, although so different, under the same name of *sense*, and *sensations*, of sight, hearing, &c. For when we say that the eye sees, that the ear hears, that cannot be understood simply in relation to the movement of the bodily organ, since it is very clear that the eye has no perception of the objects which strike it, and that it cannot judge of them. We say, on the contrary, that we have not seen a person who is present before us, and who strikes our eyes, when we have not noticed him. And then we take the word *sight* for the thought which is formed in our soul, in consequence of what passes in our eye and in our brain; and, according to that signification of the word *see*, it is the mind which sees, and not the body, as Plato maintains,

and Cicero after him, in these words:—"*Nos enim ne nunc quidem oculis cernimus ea quæ videmus. Neque enim est ullus sensus in corpore. Viæ quasi quædam sunt ad oculos, ad aures, ad nares, a sede animæ perforatæ. Itaque sæpe aut cogitatione aut aliquâ vi morbi impediti, apertis atque integris, et oculis, et auribus, nec videmus, nec audimus: ut facile intelligi possit, animum et videre et audire, non eas partes quæ quasi fenestræ sunt animi.*" Finally, the words sense, sight, hearing, &c., are taken for the last of these three things; that is to say, for the judgment which the mind forms from the perceptions which it has, on occasion of that which takes place in the bodily organs, when we say the senses are deceived: as, when we see in the water a crooked stick, and when the sun appears to us to be only two feet in diameter. For it is certain there cannot be anything at all of error or of falsehood, either in what passes in the bodily organ, or in the single perception of the soul, which is only a simple apprehension; but that all the error arises solely from our having judged wrongfully,—in concluding, for example, that the sun was only two feet in diameter, because its great distance makes that image which is formed of it in the centre of our eye, about the same size as that which would be formed there of an object of two feet in diameter, placed at a certain distance more proportionate to our common manner of seeing. But since we have made this judgment from our infancy, and are so accustomed to it, that we make it at the same instant in which we see the sun, with scarcely any reflection, we attribute it to the sight, and say, that we see objects greater, or smaller, according as they are nearer or further away from us, although it is our mind, and not our eye, which judges of their greatness or smallness.

All languages are full of a multitude of similar words, which, having only a single sound, are nevertheless signs of ideas altogether different. But it must be remarked, that when an equivocal name signifies two things which have no relation to each other, and which men have never confounded in their thoughts, it is then almost impossible that we can be deceived, and that it can become the cause of any error, as no one, with any common sense, would be

deceived by the ambiguity of the word *ram*, which signifies an animal, and a sign of the zodiac. Whereas, when the equivocation arises from the error of men themselves, who have, by mistake, confounded different ideas, as in the word *soul*, it is difficult to be undeceived, since we supposed that those who first used these words thoroughly understood them; and thus we often content ourselves with pronouncing these, without ever examining if the idea which we have of them is clear and distinct; and we attribute even to that which we call by the same word, that which agrees only with ideas of things incompatible, without perceiving that this arises only from our having confounded two different things under the same name.

CHAPTER XII.

ON THE REMEDY OF THE CONFUSION WHICH ARISES IN OUR THOUGHTS AND IN OUR LANGUAGE, FROM THE CONFUSION OF WORDS, IN WHICH THE NECESSITY AND THE ADVANTAGE OF DEFINING THE TERMS WE EMPLOY, AND THE DIFFERENCE BETWEEN THE DEFINITION OF THINGS AND THE DEFINITION OF NAMES, IS EXPLAINED.

The best way of avoiding the confusion of words which is found in common language, is to make a new language and new words, which may be attached only to those ideas which we wish them to represent. But for this purpose it is not necessary to make new sounds, since we may employ those which are already in use by regarding them as if they had no signification, in order that we may give them that which we may wish them to have, by designating, through other simple words,—about whose meaning there is no ambiguity,—the idea to which we wish to apply them; as, for instance, I wish to show that the soul is immortal, the word soul being equivocal, as we have shown

it, may easily produce confusion from what I am about to say; so, in order to avoid this, I would regard the word soul as if it were a sound which had no meaning, and I would apply it solely to that within us which is the principle of thought, saying,—*I call soul that which is the principle of thought within us.*

This is what is called the definition of a name—*definitio nominis*—which geometers have turned to such good account, and which it is necessary to distinguish from the definition of a thing—*definitio rei*—for in the definition of a thing, as, for instance, these—*Man is a rational animal*—*Time is the measure of motion*,—we leave to the terms which we define, as *man*, or *time*, their ordinary idea, in which we maintain that other ideas are contained, as *rational animal*, or *measure* of motion; whereas, in the definition of a name, as we have already said, we regard only the sound, and afterwards, we determine that sound to be the sign of an idea, which we designate by other words.

It is necessary, also, to take care not to confound the definition of the name of which we here speak, with that of which some philosophers speak, who understand by it the explanation of that which a word signifies, according to the common custom of a language, or according to its etymology.

Of this we shall speak in another place. But here we regard, on the other hand, only the particular sense in which he who defines a word wishes it to be taken, in order that his thought may be clearly conceived, without considering at all whether others take it in the same sense. And from this it follows:—1st, That the definitions of names are arbitrary, and those of things are not so; for every sound being indifferent in itself, and, by nature, fitted equally well to express all sorts of ideas, I may be allowed, for my own use, and provided I forewarn others of it, to determine a sound to signify precisely a certain thing, without any mixture of anything else; but it is quite otherwise with the definitions of *things*, for it does not depend on the will of men that ideas should comprehend all that they would wish them to comprise; so that, if, in wishing to define, we attribute to these ideas some-

thing which they do not contain, we fall necessarily into error.

Thus, to give an example of the one and of the other, if, stripping the word *parallelogram* of all signification, I apply it to signify a triangle. This is allowable, and I do not commit any error, provided I take it exclusively in this sense, and I shall then say that a parallelogram has three angles, equal to two right angles. But if, leaving to this word its ordinary signification and idea, which is that of signifying a figure whose sides are parallel, I were to say that a parallelogram is a figure with three lines—as this would then be a definition of a thing—it would be very false, it being impossible for a figure of three lines to have its sides parallel.

It follows, in the *second place*, that the definitions of names cannot be contested, because they are arbitrary; for we cannot deny that a man has given to a sound the signification which he says he has given to it, neither that it has that signification only in the use which he makes of it, after we have been forewarned of it; but, as to the definitions of *things*, it is often necessary to contest them, since they may be false, as we have before shown.

It follows, in the *third place*, that every definition of a name, since it cannot be contested, may be taken as a principle, whereas the definitions of things cannot at all be taken as principles, and are truly propositions which may be denied by those who find any obscurity in them, and which, consequently, must be proved, as other propositions, and not taken for granted, at least when they are not evident of themselves as axioms.

Nevertheless, what we have just said—that the definition of a name may be taken for a principle—needs some explanation. For this is only true, because we ought not to dispute that the idea which has been designated may not be called by that name which has been given to it. But we ought not to infer anything further than this idea, or believe, because we have given it a name, that it signifies anything real. For example, I may define a *chimera*, by saying,—I call a chimera that which implies a contradiction; and yet it will not follow from this that a chimera is anything,—in the same way as if a philosopher says to me,

—I call heaviness the inward principle which makes a stone fall without being impelled by anything. I will not contest this definition; on the contrary, I will receive it cheerfully, because it enables me to understand what he wishes to say; but I will deny that what he means by the word heaviness is anything real, since there is no such principle in stones.

I wished to explain this, since there are two great abuses which are current on this subject in philosophy. The first is, of *confounding the definition of the thing with the definition of the name, and of attributing to the former that which belongs only to the latter;* for, having made a hundred definitions, not of names, but of things, to suit their fancy, which are very false, and which do not explain at all the true nature of things, nor the ideas which we naturally have of them, they wish us then to consider these definitions as principles which none may contradict, and which, if any one denies, as he may very easily, they pretend that he is not worth disputing with.

The *second abuse* is, that, scarcely ever employing the definition of *names*, in order to remove that obscurity which is in them, and fixing to them certain ideas clearly described, they *leave them in their confusion*, whence it happens that the greater part of their disputes are only disputes about words; and further, that they employ that which is clear and true in confused ideas, in order to establish that which is obscure and false, and which they would easily have perceived to be so, if they had defined the names.

Thus philosophers commonly believe that there is nothing in the world clearer than that fire is hot, and a stone heavy, and that it would be folly to deny this,—and, in fact, they may persuade all men of this, so long as the names are undefined; but, on defining them, it will be easily found out, whether that which may be denied on this matter is clear, or obscure; for it will then be demanded of them, what they understand by the word *hot*, and by the word *heavy*. If they answer, that by heat they understand only that which really produces the sensation of heat in us, and by heavy, that which falls to the ground when nothing upholds it, they have good ground for say-

ing, that it would be unreasonable to deny that fire is hot, and a stone is heavy; but, if they understand by heat, that which has in itself a quality resembling what we imagine when we feel heat, and by weight, that which has in itself a principle which makes it fall towards the centre, without being impelled by anything, it will be easy then to prove to them, that to deny that in this sense fire is hot, and a stone heavy, is not to deny a clear thing, but one that is very obscure, not to say very false, since it is very clear that the fire gives us a sensation of heat by the impression which it makes on our body, but it is not at all clear that the fire has anything in it which resembles what we feel when we approach the fire; and it is also very clear that a stone descends when we let it fall, but it is not at all clear that it descends of itself, without there being anything to impel it downward.

We may see, thus, the great utility of the definition of names to enable us to understand exactly what is the point at issue,—to the end that we may not uselessly dispute about words which one understands in one sense, and another in another, as is so often the case in ordinary conversations.

But, besides this utility, there is still another, which is, that we often are not able to give a distinct idea of a thing, except by employing many words to describe it. Now, it would be wearisome, especially in books of science, to be always repeating this long series of words. Hence it is, that, having explained the thing by all these words, we attach to a single word the idea which we have conceived, which, in this way, takes the place of all the others. Thus, having comprehended that there are some numbers which may be divided into two equal parts, in order to avoid the constant repetition of these terms, we give a name to that property, saying, every number which is divisible into two equal parts we call *an even number*. This proves that, whenever we use the word which we have defined, we must mentally substitute the definition for the word defined, and have that definition so present, that, as soon as we mention it—*e. g.* an even number—we understand exactly that which is divisible into two equal parts, and that these two things are so inseparably joined in thought, that as soon as lan-

guage expresses the one, the mind immediately attaches to it the other; for those who define terms with so much care as the geometers, do it only to abridge the language, which such frequent repetitions would render wearisome. *Ne assiduæ circumloquendo moras faciamus*—as St Augustine says; but they have no intention of abridging the ideas whereof they speak, since they suppose that the mind will supply a complete definition to the abbreviated terms which they may employ, to avoid the embarrassment which a multitude of words would create.

CHAPTER XIII.

IMPORTANT OBSERVATIONS IN RELATION TO THE DEFINITION OF NAMES.

AFTER having explained what is meant by the definitions of names, and how useful and necessary they are, it is important to make some observations relative to the manner of using them, to the end that they be not abused.

The first is—*that we must not undertake to define all words, because this would often be useless, and it is often impossible to be done.* I say that it would often be useless to define certain names, for when the idea which men have of anything is distinct, and when all those who understand the language form the same idea in hearing a word pronounced, it would be useless to define it, since it already answers the end of definition, which is, that the word be attached to a clear and distinct idea. This is the case in very simple things, of which all men have naturally the same idea, so that the words by which they are expressed, are understood in the manner by all those who employ them; or, if at any time there be any obscurity in them, their principal attention, nevertheless, falls always on that which is clear in them; and thus those who employ them only to denote a clear idea, need not fear that they

will not be understood. Such are the words,—being, thought, extension, equality, *duration*, or *time*,—and others of a similar description. For, though some have obscured the idea of time by different propositions which they have formed, and which they have called definitions, as that time is the measure of motion, according to anteriority or posteriority, nevertheless, they do not themselves rest in these definitions when they hear time spoken of, and conceive only that which others naturally conceive of it; and thus the wise and the ignorant understand the same thing, with the same facility, when it is said that a horse takes less time to go a league than a tortoise. I say, further, that it would be impossible to define all words; for, in order to define a word, we must of necessity have others which may designate the idea to which we may wish to attach that word; and if we still wish to define the words which we have employed for the explication of it, we should still have need of others, and so on to infinity. It, therefore, is necessary that we stop at some primitive terms which cannot be defined; and it would be as great a fault to wish to define too much as not to define enough, because by one or the other we should fall into that confusion which we pretend to avoid.

The second observation is, *that we must not change definitions already received when we have nothing to complain of in them*, for it is always more easy to make a word understood, when recognised custom, at least among the learned, has attached it to an idea, than when it is necessary to affix it to a new one, and to detach it from some other idea to which custom had joined it. Hence, it would be unwise to change the received definitions of mathematicians, unless there were any that were perplexed, and whose idea had not been designated with sufficient clearness, as, perhaps, those of the angle and of proportion may be in Euclid.

The third observation is, that when we are to define a word, *we ought, as far as possible, to accommodate ourselves to custom*, in not giving to words a sense altogether removed from that which they have, and which might be even contrary to their etymology: as when I say—I call a parallelogram a figure bounded by three lines,—but con-

tent ourselves, for the most part, in stripping words which have two senses of one of these, in order to attach it exclusively to the other: as heat expresses, in its common acceptation, both sensation which we have, and a quality which we imagine to be in the fire, resembling altogether that which we feel. In order to avoid this ambiguity, I may employ the name *heat*—in applying it to one of these ideas, and detaching it from another: as I say—I call heat the sensation which I have when I approach the fire, and giving to the name of that sensation, either a name altogether different, such as that of *burning*—(ardeur)—or the same name, with some addition which determines it, or which distinguishes it from heat taken from the sensation, as we might say *virtual heat.*

The reason of this observation is, that men having at one time attached an idea to a word, do not easily separate the two; and thus, the former idea always returning, causes them easily to forget the new, which you would give them in defining that word, so that it would be more easy to accustom them to a word which signified nothing at all: as when I say—I call *bara* a figure bounded by three lines—than to accustom them to strip from the word parallelogram the idea of a figure whose opposite sides are parallel, to make it signify a figure whose sides could never be parallel.

It is a mistake into which all chemists have fallen who have delighted to change the names of almost everything whereof they speak, without any advantage, and of giving them those which already signify other things which have no real relation to the new ideas with which they connect them. This has given rise to some ridiculous arguments: as that of the man who, imagining that the plague was a Saturnian evil, pretended that people would be cured of the pestilence by hanging round the neck a bit of lead (which the chemists call Saturn), upon which was engraved, on a Saturday (which also derives its name from Saturn), the figure which astronomers use to denote that planet, as if these connections, arbitrary and without reason, between the lead and the planet Saturn, and between the same planet and Saturday, and the small mark which denotes it, could have any real effects, and could cure, effectually, diseases.

But what is more intolerable, is the profanation which they make of the most sacred mysteries of religion as a veil for their pretended secrets; so far, indeed, that there are some who have been impious enough to apply what the Scripture says of true Christians,—that they are the chosen race,—the royal priesthood,—the holy nation,—the people whom God has chosen, and whom he has called out of darkness into his wonderful light,—to the chimerical brotherhood of the Rosicrucians, who are, according to them, sages who have attained to a glorious immortality, having found the means, through the philosophers' stones, of fixing their soul in their body; inasmuch as (say they), there is no body more fixed and incorruptible than gold. We may see these reveries, and many others like them, in the examination of Fludd's philosophy, by Gassendi, who showed that there was scarcely any character of mind worse than that of these enigmatical writers, who imagine that thoughts the most groundless, not to say false and impious, would pass for grand mysteries when clothed in forms of speech unintelligible to common men.

CHAPTER XIV.

OF ANOTHER SORT OF DEFINITION OF NAMES, THROUGH WHICH THEIR ORDINARY SIGNIFICATION IS DENOTED.

All that we have said about the definition of names is to be understood only of those in which an author defines the words which he especially employs; and it is this which renders them free and arbitrary, since it is allowed to every one to employ whatever sound he pleases to express his ideas, provided he explains beforehand the use of them. But as men are only masters of their own language, and not of that of others, each has, indeed, the right to make a dictionary for himself; but he has no right either to make

one for others, or to explain their language by the peculiar signification which he has attached to words. Thus, when we undertake to explain, not simply in what sense we take a word, but also that in which it is commonly taken, the definitions which we give of it are by no means arbitrary; they are bound and restricted to represent, not the truth of the things, but the truth of the custom; and they are to be reckoned false if they do not faithfully express this custom,—that is to say, if they do not join to sounds the same ideas which are connected with them, in the ordinary meaning of those who employ them. And this shows, also, that these definitions are by no means free from being contested, since disputes continually arise touching the signification which custom gives to terms.

Now, although this species of verbal definitions seems to belong to grammarians, since it is their office to compile dictionaries, which are nothing but an explanation of the ideas which men have agreed to connect with certain sounds; we may, nevertheless, make several reflections in reference to this subject, which are very important to the exactness of our judgments.

The first, which may serve as a foundation for others, is, that men very often do not consider the *entire signification* of words,—that is to say, that words often express more than they seem to do; and when we would explain the signification of them, we do not represent the *whole* impression which they make on the mind.

For *to signify*, in relation to a sound uttered or written, is only to excite an idea connected with that sound in our mind, by striking our ears or our eyes. Now it often happens that a word, besides the *principal* idea, which we regard as the proper signification of that word, excites many other ideas, which may be termed *accessory*, to which we pay but little attention, though the mind receives the impression of them.

For example, if one says to another, *You lied there*, and we regard only the principal signification of that expression, it is the same thing as if he had said to him, *You know the contrary of what you say*. But, besides this principal signification, these words convey an idea of contempt and outrage; and they inspire the belief, that he who uttered

them would not hesitate to do us harm, which renders them offensive and injurious.

Sometimes these *accessory ideas* are not attached to words by common custom, but are joined to them only by him who uses them. And these are properly those which are excited by *the tone of the voice*, by the *expression of the countenance*, by *gestures*, and *other natural signs*, which attach to our words a multitude of ideas, which diversify, change, diminish, and augment their signification, by joining to them the image of the emotions, the judgments, and the opinions of him who speaks.

Wherefore, if he who said that it was necessary to modulate the tone of our voice to the ears of him who listens, meant to say that it was enough, if we only spoke loud enough to be heard, he knew not a great part of the use of the voice, since the tone signifies often as much as the words themselves. There is a voice for instruction, flattery, and for reproof; and often it is, indeed, not only to *reach* the ears of him to whom it is spoken, but *to strike* them, and *pierce* them. No one would take it well, for instance, if a servant, whom he was reproving somewhat sharply, should answer, *Speak lower, sir, I hear you well enough;* since the tone constitutes part of the reproof, and it is necessary to convey to the mind the idea you wish to impress on it.

But sometimes these *accessory ideas* are attached to the *words themselves*, since they are excited commonly by all those who pronounce them. And this constitutes the difference between expressions which appear to signify the same thing: some being offensive, others kind; some modest, others impudent; some virtuous, others vicious;—since, besides the principal idea to which they belong, men attach to them other ideas, which is the cause of this diversity.

This remark will enable us to point out an injustice, very common among those who complain of the reproaches which they have received,—which is that of *changing substantives into adjectives;* so that, if they have been accused of ignorance or imposture, they say that they have been called ignorant men, or impostors, which is unreasonable, since these words do not signify the same thing; for the

adjective words, ignorant, or impostor, besides the signification of blame which they denote, involve also the idea of contempt; whereas those of ignorance, or imposture, denote the thing just as it is, without aggravation or palliation. We may find others which signify the same thing, in a way that would involve a softening idea, and which would evince a desire to spare the feelings of him against whom the reproaches were made. And these are the ways which the wise and moral will choose, at least when they have no special reason to act with greater severity. Hence, we may perceive the difference between a simple style and a figurative style, and how the same thoughts appear to us much more lively when they are expressed by a figure, than when they are contained in expressions quite simple. For this happens, because the figurative expressions signify, besides the principal thing, the emotion and passion of him who speaks, and thus impress both ideas upon the mind; whereas a simple expression denotes the naked truth alone. For example, if this half verse of Virgil, *Usque adeone mori miserum est?*—were expressed simply, and without a figure, thus—*Non est usque adeo mori miserum*,—it cannot be doubted that it would have much less force. And the reason is, that the first expression signifies much more than the second; for it expresses not only the thought that death is not so great an evil as it is supposed to be, but it represents, further, the idea of a man who challenges death, and who looks it fearlessly in the face,—an image much more lively than the thought itself with which it is connected. Thus it is not wonderful that it strikes us more, since the mind is *instructed* by the images of truths, while it is rarely *excited*, except by the image of emotions.

> "Si vis me flere, dolendum est
> Primum ipsi tibi."

But since the figurative style commonly expresses, with the things, the emotions which we experience, in conceiving or speaking of them, we may judge the use which ought to be made of it, and what are the subjects to which it is adapted. It is clear that it is ridiculous to employ it in matters purely speculative, which are regarded with a tranquil eye, and which produce no emotion in the mind.

For, since figures express the emotions of our soul, those which are introduced into subjects, where the mind is not moved, are emotions contrary to nature, and a species of convulsions. This is why there are few things so disagreeable, as to hear certain preachers who declaim indifferently on everything, and who are as much excited in philosophic arguments as in truths the most awakening, and the most necessary to salvation.

While, on the contrary, when the matter of which we treat is such, that we ought properly to be affected, it is a defect to speak of it in a dry and cold manner, and without emotion, since it is a defect not to be touched by that which ought to affect us.

Thus divine truths, being propounded, not simply for the purpose of being *known*, but also much more, in order that they may be *loved*, *revered*, and *adored by men*,—the noble, exalted, and figurative style in which the holy fathers have treated of them, is, without doubt, much better adapted to them than the bare, unfigurative style of the scholastics; since it not only teaches us these truths, but represents to us also the feelings of love and of reverence with which the fathers spoke of them; and which, conveying thus to our minds the image of that holy disposition, may contribute much towards impressing the like on us; whereas the scholastic style being simple, and recognising only ideas of the naked truth, is less capable of producing in the soul the emotions of love and respect which we ought to have for christian truths, and renders them in this respect, not only less useful, but also less agreeable,—the pleasure of the soul consisting more in *feeling emotions* than *acquiring knowledges*.

Finally, the same remark will enable us to answer that celebrated question of the ancient philosophers, *Whether there be unchaste words?* and to refute the reasons of the Stoics, who maintained that we might employ, indifferently, expressions which are commonly reckoned obscene and impudent.

"They maintain, says Cicero, in a letter which he wrote on this subject, that there are no words either lewd or shameful. For the infamy, say they, either comes from the things, or is in the words. It does not arise exclu-

sively from the things, since we may express them in other words, which are not considered unchaste. Neither is it in the words, considered as sounds; since it often happens, as Cicero shows, that the same sound signifies different things, and is considered unchaste in one signification, and not so in another.

But all this is but a vain subtilety, which arises solely from these philosophers not having considered sufficiently those accessory ideas which the mind joins to the principal ideas of things, for hence it comes to pass, that the same thing may be expressed chastely by one sound, and unchastely by another, if one of these sounds joins to it some other idea, which hides the infamy of it, and if another, on the contrary, presents it to the mind in a shameless manner. Thus the words adultery, incest, abominable sin, are not infamous, though they represent actions which are very infamous, since they represent them only as covered with a veil of horror, which causes them to be regarded exclusively as crimes; so that these words signify rather the crime of these actions than these actions themselves; whereas there are certain other words which express them, without exciting horror, and rather as pleasant than as criminal, which even connect with them an idea of impudence and effrontery. And these are those which are called unchaste and infamous.

It is the same also with certain circumstances by which we express, chastely, certain actions, which, though lawful, partake somewhat of the corruption of nature. For these circumlocutions are, in reality, chaste, since they express not only the things, but also the disposition of him who speaks of them in this way, and who shows by his reserve, that he hides them as much as possible, both from himself and others; whereas those who should speak of them in another manner, would show that they delighted in considering these kind of objects; and that delight being infamous, it is not wonderful that the words which express that idea should be considered unchaste.

Hence it sometimes happens also, that the same word is reckoned chaste at one time, and immodest at another. This obliged the Hebrew doctors to substitute, in certain parts of the Bible, Hebrew words in the margin, to be

used by those who read it in place of those which the Scriptures use. For this arose from the fact that these words, when the prophets employed them, were not unchaste, as they were connected with some idea which caused these objects to be regarded with modesty and reserve; but afterwards, that idea having been separated from them, and custom having joined to them another of impudence and effrontery, they became immodest; and it is with reason, in order that that bad idea might not strike the mind, that the Rabbins wished others to be pronounced instead of them, in reading the Bible, although they did not, on that account, change the text.

Thus it was a bad defence made by an author, who was bound to a strict modesty by his religious profession, and who was reproached, with reason, for having employed an unchaste word to express an infamous place, to allege that the fathers had not scrupled to employ the term *lupanar*, and that we often find in their writings *meretrix*, *leno*, and others, which would hardly be endured in our language; for the freedom with which the fathers employed these words, ought to have taught him that they were not reckoned shameful in their time, that is to say, there was not then connected with them that idea of effrontery which renders them infamous now; and he did wrong to conclude thence, that he might be allowed to employ those which are reckoned immodest in our language, because these words do not signify, in fact, the same thing as those which the fathers used, since, beside the principal idea which belongs to them, they involve also the image of a bad inclination of the mind, and one which partakes, to some extent, of libertinism and impudence.

These accessory ideas being therefore so important, and diversifying so widely the principal significations, it would be useful for the authors of dictionaries to indicate them, and to make known, for example, the words which are offensive, polite, abusive, chaste, unchaste; or rather, that they should throw aside these last altogether, since it is always better to be ignorant of them, than to know them.

CHAPTER XV.

OF IDEAS WHICH THE MIND ADDS TO THOSE WHICH ARE EXPRESSLY SIGNIFIED BY WORDS.

We may also comprehend, under the name of accessory ideas, another kind of ideas, which the mind adds to the exact signification of the terms for a special reason, which is, that it often happens when, having conceived that exact signification which answers to the word, it does not rest there when this is too general and confused, but extends its view further, taking occasion to consider, beyond the object which is presented to it, other attributes and phases, and thus of conceiving it by ideas which are more distinct.

This happens specially in the case of the demonstrative pronouns, when, instead of the proper name, we employ the neuter, *hoc*, this; for it is clear that *this* signifies *this thing*, and that *hoc* signifies *hæc res*, *hoc negotium*. Now, the word thing, *res*, denotes an attribute very general and confused, of every object, there being only nothing to which it may not be applied. But as the demonstrative pronoun *hoc* does not simply denote the thing in itself, but also causes it to be conceived as present, the mind does not confine itself to that single attribute *thing*, but commonly gives that to certain other distinct attributes. Thus when we employ the word *that*, pointing to a diamond, the mind is not satisfied with conceiving it as a thing present, but adds thereto the ideas of a hard and shining body of such a form.

All these ideas, those which the mind adds, as well as the first and principal one, are excited by the word *hoc*, applied to a diamond; but they are not excited by it in the same manner, for the idea of the attribute, *thing present*, is excited, as the proper signification of the word, and the others are excited as ideas which the mind conceives as connected with that first and principal idea, but which are not expressly denoted by the pronoun *hoc*. Hence the

additions are different, according as we apply the word *hoc*, in relation to different things.

If I say *hoc* in pointing out a diamond, the term will always signify *this thing;* but the mind will supply and add thereto,—*which is a diamond,—which is a hard brilliant body,*—if it be wine, the mind will add to it the ideas of liquidity, of taste, and of the colour of the wine.

These added ideas must, therefore, be clearly distinguished from the ideas expressed, for though they are both found in the same mind, they are not found there in the same manner; and the mind which adds these other ideas more distinct, still conceives the term *hoc* expresses in itself only a confused idea, which, though joined to ideas more distinct, remain always confused.

Hence we are enabled to silence an intrusive wrangling, which the ministers have rendered celebrated, and in which they found their main argument for proving their figurative sense in the Eucharist; and the employment of this remark here for the purpose of clearing up this argument, ought not to be considered strange, since it is more fitted for logic than theology. They pretend that in that proposition of Jesus Christ, *this is my body*, the word *this* signifies *bread;* now, say they, the bread cannot really be the body of Jesus Christ, therefore the proposition of Jesus Christ does not mean *this is really my body.*

It is not necessary to examine here, the minor, and prove its falsehood,—this has been done elsewhere,—we only here inquire into the major, where they maintain that the word *this* signifies *bread.* In relation to this, we have only to tell them, according to the principles we have established, that the word bread, denoting a distinct idea, is not expressly that which answers to the term *hoc*, which denotes only a confused idea of a thing present; but that it is very true, that Jesus Christ, in pronouncing this word, and directing the attention of his apostles at the same time to the bread, which he held in his hands, that they probably added to the confused idea of *thing present* expressed by the term *hoc*, the distinct idea of bread, which is excited only, and not expressly signified by that term. It is simply want of attention to this necessary distinction between the ideas excited, and the ideas expressly signified, that

has occasioned all the perplexity of the ministers. They make a thousand useless efforts to prove that the apostles, when Jesus Christ showed them the bread, and directed their attention to it by the term *hoc*, could not have conceived anything but *bread*. We grant that they probably did conceive bread, and that they had ground for so conceiving. It does not require much to show this. The question is not whether they conceived bread, but *how* they conceived it, and on this point we may say that if they conceived, that is to say, if they had in their minds a distinct idea of bread, they did not have it as signified by the word *hoc*, for this is impossible, since this term never signifies anything but a confused idea, but they had it as an idea added to that confused idea, and excited by the circumstances. The importance of this remark will be seen in what follows. But it is well to add here, that this distinction is so indubitable, that even when they undertake to prove that the term *this* signifies *bread*, they do nothing else but establish it. This word, says a minister who spoke last on the subject, not only signifies *this thing present*, but this *thing present which you know to be bread*. Who does not see in this proposition that the terms *which you know to be bread*, are clearly added to the words, *thing present*, by an incidental proposition, but are not signified expressly by the words *thing present*. The subject of a proposition does not signify an entire proposition, consequently, in this proposition, which has the same sense, *this which you know to be bread*, the word *bread* is clearly *added* to the word this, and *not expressed* by it.

But what matter is it, say the ministers, that the word *this* signifies expressly *bread*, provided it be true that the apostles conceived that what Jesus Christ called *this* was *bread*?

The importance of this point is, that the term *this*, signifying in itself only the precise idea of *things present*, although determined to signify *bread*, by the distinct ideas which the apostles added to it, remains always capable of another determination, and of being connected with other ideas, without the mind's perceiving this change of object. And thus, when Jesus Christ affirmed of *this*, that it was *his body*, the apostles had only to cut off the ideas which

they had made by the distinct idea of bread, and detaining the same idea of thing present, they would conceive after the proposition of Jesus Christ was finished, that this *thing present* was now the body of Jesus Christ. Thus they would connect the word *hoc*, *this*, which they had joined to bread, by an incidental proposition, with the attribute *body of Jesus Christ*. The attribute body of Jesus Christ would oblige them indeed to remove the added ideas, but it would not make any change in the idea precisely denoted by the word *hoc*, and they would conceive simply that it was the body of Jesus Christ. Here is seen all the mystery of this proposition, which arose not from the obscurity of the terms, but from the change effected by Jesus Christ, who caused this subject, *hoc*, to have two different terminations, at the commencement, and at the end of the proposition, as we shall explain in the Second Book, when treating of unity of confusion in subjects.

SECOND PART.

CONTAINING THE REFLECTIONS WHICH MEN HAVE MADE ON THEIR JUDGMENTS.

CHAPTER I.

OF WORDS IN THEIR RELATION TO PROPOSITIONS.

As it is our design to explain here the various reflections which men have made on their *judgments*, and as these judgments are *propositions* which are composed of various *parts*, it is necessary to begin with the explanation of *these parts*, which are principally *nouns*, *pronouns*, and *verbs*.

It is of little importance to examine whether it belongs to *grammar* or to *logic* to treat of these things; it is enough to say, that everything which is of use to the end of any art, belongs to it, whether that knowledge be *special* to it, or whether it be *common* also to other arts and sciences which contribute to it.

Now, it is certainly of some use to the *end* which logic contemplates—*that of thinking well*—to understand the different uses of the sounds which are devoted to the expres-

sion of our ideas, and which the mind is accustomed to connect so thoroughly, that it scarcely conceives the one without the other; so that the idea of *the thing* excites the idea of the *sound*, and the idea of *sound*, that of the *thing*.

We may say, in general, on this subject, that WORDS are *sounds distinct and articulate, when men have taken as signs to express what passes in their mind;* and since that which passes there may be reduced to *conceiving, judging, reasoning*, and *disposing*, as we have already said; words serve to indicate all these operations, and those which have been invented for this purpose, are principally of *three kinds*, which are essential, and of which it will be sufficient to speak. These are *nouns, pronouns*, and *verbs*, which take the place of nouns, but in a different way. It will be here necessary to explain this more in detail.

OF NOUNS.

The *objects* of our thoughts being, as we have already said, either *things*, or *modes of things*, the words set apart to signify both things and modes are called *nouns*.

Those which signify *things* are called NOUNS SUBSTANTIVE, as *earth, sun*. Those which signify *modes*—marking, however, at the same time, the *subject*, of which they are the modes—are called NOUNS ADJECTIVE, as *good, just, round*.

This is why—when, by mental abstraction, we conceive these modes without connecting them with any subject, since they then subsist in some sort by themselves, in the mind—they are expressed by a *substantive* word, as *wisdom, whiteness, colour*.

And, on the contrary, when that which is of itself the substance of a thing, comes to be conceived in *relation to another subject*, the words which express it in this relation become *adjectives*, as *human, carnal;* and, taking away from these adjectives formed from nouns of substance, their relation to these, they are made substantives anew. Thus, after having formed from the substantive word *homo* (*homme*), the adjective *human*, we form from the adjective *human*, the substantive *humanity*.

There are some nouns which pass for *substantives*, which are *really adjectives*, as *king*, *philosopher*, *physician*, since they denote the manner or mode of being of a subject. But the reason why they pass for substantives is, that as they belong only to a *single subject*, we always understand that single subject, without its being necessary to express it. For the same reason, these words, *red*, *white*, &c., are real *adjectives*, because the relation is denoted; but the reason why we do not express the substantive to which they are related is, that it is a general substantive, which comprehends all the subjects of these modes, and is hence unique in that generality. Thus, *red* is *everything red; white, everything white;* or, as it is said in geometry, a red thing, *quodcumque*. These adjectives have, therefore, essentially *two* significations: the one *distinct*, which is that of a *mode* or *manner;* the other *confused*, which is that of the *subject*. But though the signification of mode may be more distinct, it is often indirect; and, on the contrary, that of subject, though confused, is direct. The word *white* (*candidum*) signifies indirectly, though distinctly, *whiteness*.

OF PRONOUNS.

The use of pronouns is to occupy the place of nouns, and thus enable us to avoid the too tedious repetition of them; but we are not to imagine that, in taking the place of nouns, they produce entirely the same effect on the mind. This is by no means true; on the contrary, they remove the disgust felt at repetition only because they represent the nouns, but in a confused manner. Nouns disclose, in some sort, the things to the mind; pronouns present them, as it were, veiled, though the mind perceives, nevertheless, that they are the same things as those which were signified by the nouns. This is why no inconvenience arises from the noun and the pronoun being joined together—*Tu Phœdria. Ecce ego Joannes.*

OF DIFFERENT KINDS OF PRONOUNS.

Men perceiving that it was often useless and ungraceful to

name themselves, introduced the pronoun of the *first* person to supply the place of him who speaks, *ego* (*moi, je*). And in order that they may not be obliged to name the person to whom they spoke, they have thought good to denote him by a word, which they have called the pronoun of the *second* person, *thou*, or *you;* while, in order that they might not be obliged to repeat the names of other persons and things of which they speak, they have invented pronouns of the *third* person—*ille, illa, illud.* Among these, there are some which point out, as with a finger, the thing spoken of, and are hence called *demonstratives—hic, iste*—this, that; there are also some which are called *reciprocal,* because they denote the relation of a thing to itself, as the pronoun—*sui, sibi, se—Cato slew himself.*

All the pronouns have, as we already said, this in common: they mark confusedly the noun whose place they occupy; but there is this specially in the neuter of these pronouns, *illud, hoc,* when it is taken absolutely, that is to say, without a noun expressed: that whereas the other kinds are often, indeed almost always, related to distinct ideas, which they, nevertheless, denote only confusedly—*illum expirantem flammas,* that is to say—*illum Ajacem: His ego nec metas rerum nec tempora ponam,* that is to say, *Romanis:* the neuter, on the contrary, is always related to a word generally, and confused; *hoc erat in votis,* that is to say, *hæc res, hoc negotium erat in votis: hoc erat alma parens,* &c. Thus, there is a double confusion in the neuter—to wit, that of the pronoun, the signification of which is always confused, and that of the word *negotium, thing,* which is also general, and confused.

OF THE RELATIVE PRONOUN.

There is yet another pronoun which is called *relative—qui, quæ, quod—who, which, that.* This relative pronoun has something in common with the other pronouns, and something peculiar to itself. It has this in *common,* that it takes the place of a noun, and excites a confused idea. It has this *peculiar,* that the proposition into which it enters may be made part of the subject, or predicate of a propo-

sition, and thus form one of those added or incidental propositions, of which we shall speak more at large further on. *God* WHO *is good,—the world* WHICH *is visible.*

(We presume here that these terms, *subject* and *predicate* of propositions, are understood, though they have not as yet been formally explained, because they are so common that they are usually understood before logic is studied. Those who do not understand them need only refer to the place where their meaning is explained.)

We are, hence, able to resolve this question: What is the precise meaning of the word *that* when it follows a verb, and appears to be related to nothing?—*John answered that he was not the Christ; Pilate said that he found no guilt in Jesus Christ.* There are some who would make *it* an *adverb*, (as well as the word *quod*, which the Latins sometimes, though rarely, take in the same sense as our *that* (*que*). *Non tibi objicio quod hominem spoliâsti*, says Cicero.)

But the truth is, that the word *that* (*quod*) is nothing more than the *relative pronoun*, and it preserves its meaning; thus, in that proposition, *John answered that he was not the Christ*, the *that* retains the office of connecting another proposition, to wit, *was not the Christ*, with the attribute contained in the word *answered*, which signifies *fuit respondens.* The other use, which is, to *supply the place of the noun*, appears here with much less truth, which has led some able men to say, that this *that* was entirely without it in this case. We may, however, say, that it retains it here also; for, in saying that *John answered*, we understand that he made an answer; and it is to this confused idea of answer that this *that* refers. In the same way, when Cicero says, *Non tibi objicio quod hominem spoliâsti*, the *quod* refers to the confused idea of a *thing objected*, formed by the word *objicio;* and that thing objected, conceived before obscurely, is then particularised by the incidental proposition, connected by the *quod—quod hominem spoliâsti.*

The same thing may be remarked in these questions—*I suppose that you will be wise—I say that you are wrong.* The term *I say* causes us at once to conceive confusedly *a thing said;* and it is to this thing said that the *that* refers. *I say that*, that is to say, *I say a thing which is.* And, in

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the same way, he who says, *I suppose*, gives a confused idea of a thing supposed; for *I suppose* means, *I make a supposition;* and it is to this idea of thing supposed that the *that* refers. *I suppose that*, that is to say, *I make a supposition which is.*

We may place in the rank of pronouns the Greek article, ὁ, ἡ, τὸ, when it is placed after, instead of before, the noun; τουτό ἐστι τὸ σῶμά μου τὸ ὑπὲρ ὑμῶν διδόμενον, says St Luke, for the τὸ, *the*, represents to the mind the body, σῶμα, in a confused manner. Thus it has the office of a pronoun; and the only difference there is between the article, employed in this manner, and the relative, is, that though the article occupies the place of the noun, it joins, notwithstanding, the attribute which follows it to the noun which precedes; but the relative makes, with the attribute following, a separate proposition, though joined to the first —ὅ δίδοται, *quod datur*,—that is to say, *quod datum est.*

From this use of the article, we may judge that there is little solidity in the remark which has been lately made by a minister on the manner in which these words of the evangelist, St Luke, to which we have referred above, ought to be translated, because, in the Greek text, there is not a relative pronoun, but an article—*this is my body, given for you*,—and not *which* is given for you; τὸ ὑπὲρ ὑμῶν διδόμενον, and not ὃ ὑπὲρ ὑμῶν δίδοται. He maintains that it is absolutely necessary, in order to express the force of this article, to translate the text thus:—*This is my body; my body given for you*—or, *the body given for you;* and that the passage is not properly translated when we express it in these terms:—*This is my body*, WHICH *is given for you.*

This pretension is founded solely on the imperfect manner in which that author has penetrated into the true nature of the *relative pronoun*, and of the *article;* for it is certain, that as the relative pronoun, *qui, quæ, quod*, in taking the place of the noun, only represents it in a confused manner, so also the article, ὁ, ἡ, τὸ, only represents confusedly the noun to which it refers; so that this confused representation, being specially designed to avoid the distinct repetition of the same word, which is offensive, we in some sort destroy the end of the article, in translating it, by an express repetition of the same word—*this*

is my body—my body given for you,—the article being introduced for the express purpose of avoiding this repetition; whereas, when we translate it by the relative pronoun, we preserve that essential condition of the article, which is, of representing the noun only in a confused manner, and thus of not presenting the same image to the mind twice; and fail only to preserve another, which would seem less essential, that the article so takes the place of the noun, that the adjective which is connected with it does not make a new preposition—*τὸ ὑπὲρ ὑμῶν διδόμενον*: whereas the relative pronoun, *qui, quæ, quod,* divides it somewhat more, and becomes the subject of a new proposition—*ὅ ὑπὲρ ὑμῶν δίδοται.* Thus, in truth, neither of these translations, *This is my body, which is given for you,—This is my body, my body given for you,*—is quite perfect; the one changing the confused signification of the article to a signification distinct, contrary to the nature of the article; and the other, which preserves that confused signification, separating the sentence into two propositions by means of the relative pronoun, which would have been avoided by the article. But if we are necessarily obliged to use the one or the other, we have no right to condemn the first in choosing the second, as that author professed to do by his remark.

CHAPTER II.

OF THE VERB.

We have borrowed thus far what we have said of nouns and pronouns, from a little book printed some time ago, under the title of a *General Grammar*, with the exception of some points, which we have explained in a different way; but in regard to the verb, of which that author treats in his 13th chapter, we shall merely transcribe what he has

said, since it appears to us that nothing can be added to it.

"Men," says he, "have not less need to invent words which may denote affirmation, which is the principal manner of our thoughts, than to invent those which may denote the *objects of our thoughts.*" And herein properly consists that which we call *verb, which is nothing else than a word, the principal use of which is to express affirmation,* that is to say, to denote that the discourse in which the word is employed is the discourse of a man who not only conceives things, but who judges and affirms of them, in which the verb is distinguished from other nouns, which also signify affirmation, as *affirmans, affirmatio,* because these signify it only so far as through a reflection of the mind it becomes an object of our thoughts, and thus they do not denote that he who employs these words *affirms,* but only that he *conceives an affirmation.* I said that the *principal* use of the verb was to signify *affirmation,* because, as we shall come to see further on, it is employed also to express other movements of the mind, as those of *desiring, entreating, commanding,* &c. But this is done only by the inflection of the mood, and thus we shall consider the verb, through the whole of this chapter, in its principal signification alone, which is that which it has in the *indicative mood.* According to this, we may say that the verb of itself ought to have no other use than that of marking the connection which we make in our mind between the two terms of the proposition; but there is only the verb *to be,* which we call substantive, which has remained in this simplicity, and even it, properly speaking, has only remained so in the third person present, *is,* and at certain times; for, as men naturally come to abbreviate their expressions, there are joined almost always to the affirmation other significations in a single word.

I. They have joined that of some attribute, so that when two words constitute a proposition, as when I say *Petrus vivit, Peter lives,* because the word *vivit* contains in itself the *affirmation,* and besides this, the *attribute* of *being alive,* thus it is the same thing to say, *Peter lives,* as it is to say, *Peter is alive.* Hence has arisen the great diversity of verbs in every language, whereas, if men had

been satisfied with giving to the verb the general signification of affirmation, without joining to it any particular attribute, each language would have needed only a single verb, that, to wit, which is called substantive.

II. They have further joined to it, in certain cases, the *subject of the proposition*, so that then two words, and, indeed, a single word even, may make a complete proposition, two words, as when I say *sum homo*, since sum expresses not only affirmation, but includes the signification of the pronoun *ego*, which is the subject of this proposition, and which we always express in our language (*je suis homme*), *I am a man*. A single word, as when I say *vivo*, *sedes*, these verbs contain in themselves both the *affirmation* and the *attribute*, as we have already said, and being in the first person they contain also the subject, *I am living*, *I am sitting*, hence arises the difference of persons, which is commonly found in all verbs.

III. They have also added a *relation to the time* in regard to which we affirm, so that a single word, as *cœnasti*, signifies that I affirm of him to whom I speak, the action of supping, not in relation to the present time, but to the past, and hence arises the *diversity of times*, which also is, for the most part, common to all verbs.

The diversity of these significations has prevented many persons, otherwise very able, from clearly understanding the nature of the verb, because they have not considered it in relation to that which is essential to it, which is *affirmation*, but according to other relations, which are *accidental to it*, *qua* verb. Thus Aristotle, dwelling on the third of the significations, added to that which is essential to the verb, defined it *vox significans*, *cum tempora*, a word which is significant with time.

Others, as Buxtorf, having added the second, have defined it, *vox flexilis cum tempora*, *et persona*, a word having various inflections with times and persons.

Others stopping at the first of these, added significations, and considering that the attributes which men have joined to the affirmation in a single word, are commonly actions and passions, have believed that the essence of the verb consists in expressing actions or passions. And finally, Julius Cæsar Scaliger thought that he had found out a

mystery, in his book on the Principles of the Latin language, in saying that the distinction of things, *in permanentes et fluentes*, into those which remain, and those which pass away, was the true origin of the distinction between *nouns* and *verbs*—the office of nouns being to express what remains—and verbs, what passes away.

But it may be easily seen, that all these definitions are false, and do not express the true nature of the verb. The manner in which the two first are conceived, sufficiently proves this, since it is not said what the verb signifies, but only what its signification is connected with, *cum tempore, cum persona.*

The two last are still worse; they have the two great vices of a definition, which is, that they belong neither to the whole thing defined, nor to it alone, *neque omni, neque soli*, for there are verbs which signify neither actions nor passions, nor that which passes away, as *existit, quiescit, frigit, alget, tepet, calet, albet, viret, claret*, &c. And there are words which are not verbs, which signify actions and passions, and even things which pass away, according to the definition of Scaliger, for it is certain that *participles* are true nouns, and that, nevertheless, those of active verbs do not signify actions less, and those of passives, passions less, than the verbs whence they are derived; and there is no reason at all for maintaining that *fluens* does not signify a thing which passes away, as well as *fluit.*

To which we may add, against the two first definitions of the verb, that the participles also signify time, since they are of the present, of the past, and of the future, especially in Greek; and those who believe, and not without reason, that the vocative is a true second person, especially when it has a different termination from the nominative, will hold that there is on that, in this point of view, only a difference, more or less, between the vocative and the verb.

And thus the essential reason why a *participle* is not a *verb* is this, that it does not *express affirmation;* whence it happens that it cannot make a proposition which it is the property of the verb to do, except by being joined to a verb; that is to say, by that being restored to it which had been taken away, in changing the verb into a participle;

for how is it that *Petrus vivit*—Peter lives—is a proposition, and that *Petrus vivens*—Peter living—is not one, unless you add *est* to it—*Petrus est vivens*—Peter is living—except because the *affirmation* which is contained in *vivit* had been taken away, in order to make the participle *vivens;* whence it appears, *that the presence or absence of affirmation, in a word, is that which constitutes it a verb, or not a verb.*

On which you may further remark, by the way, that the *infinitive*, which is very often a noun, as when we say (*le boire, le manger*)—to drink, to eat—is then different from the participles in this, that the participles are nouns adjective, while the infinitive is a noun substantive, made by abstraction of that adjective, in the same way as from *candidus* is made *candor*, and from *white* comes *whiteness*. Thus the verb *rubet* expresses *is red*, including at once both the affirmation and the attribute *rubens*—the participle signifies simply red, without any affirmation, and *rubere* is taken for a noun, signifying *redness*.

It ought, therefore, to be laid down as established, that, considering simply what is *essential* in the verb, its only true definition is *vox significans affirmationem—a word which signifies affirmation.*

For we can find no word denoting affirmation which is not a verb, and no verb which does not denote it, at least, in the indicative; and it is unquestionable, that if one had been invented, as *est*, always marking affirmation, without any difference of persons or of times, so that the diversity of persons be denoted only by nouns and pronouns, and diversity of times by adverbs, it would still, nevertheless, have been a true verb. As, in fact, is the case in the propositions which philosophers term those of eternal truth: as, *God is infinite; all body is divisible; the whole is greater than its part;* the word *est* signifies, simply, affirmation alone, without any relation to time, because these are true in relation to all times, and without fixing the attention of the mind on any diversity of persons.

Thus the verb, in relation to what is essential to it, is a word which signifies *affirmation.* But if we wish to include in the definition of the verb its principal accidents, we may define it thus: *vox significans affirmationem cum designatione personæ numeri, et temporis,—a word which signifies affirma-*

tion, with the designation of person, number, and time; which belongs specially to the substantive verb.

For in relation to the other verbs, in so far as they differ from the substantive verb, by the union which men have made of the affirmation with certain attributes, we may define them as follows: *vox significans affirmationem alicujus attributi cum designatione personæ, numeri, et temporis,—a word which denotes the affirmation of some attribute, together with the determination of person, number, and time.*

We may remark, in passing, that since affirmation, as conceived, may also be the attribute of the verb, as in the verb *affirmo*, this verb signifies two affirmations, of which one regards the person who speaks, and the other the person who is spoken of, whether this be oneself or another. For when I say, *Petrus affirmat, affirmat* is the same thing as *est affirmans;* and it then makes my affirmation, or the judgment I make touching Peter, and *affirmans*, the affirmation which I conceive and attribute to Peter. The verb *nego*, on the contrary, contains an affirmation, and a negation, for the same reason.

It is, however, still necessary to remark, that though all our judgments are not affirmations, but some of them negations, yet, nevertheless, that verbs only signify of themselves affirmations,—the negations being expressed by the particles *non, not*, or by words involving *nullus, nemo—none, no one*, which, being united to verbs, change them from affirmative to negative: *no man is immortal; no body is indivisible.*

CHAPTER III.

OF WHAT IS MEANT BY A PROPOSITION, AND OF FOUR KINDS OF PROPOSITIONS.

After having conceived things through ideas, we compare these ideas together; and, finding that *some agree* together,

and that others *do not agree*, we unite or separate them, which is called *affirming* or *denying*, and generally, *judging*.

This judgment is called also a *proposition*, and must have, as will be easily seen, *two terms*,—the one, that of which we affirm or deny something, which is called the *subject*; and the other, that which we affirm or deny, which is called *attribute*, or *predicate*.

It is not sufficient to *conceive* these two terms,—the mind must also unite or separate them: and this action of our mind is denoted, as we have already said, in discourse, by the verb *is*, either alone, when we affirm, or with the negative particle, when we deny. Thus, when I say, *God is just*, *God* is the *subject* of that proposition, and *just* is the *attribute*; and the word *is* marks the operation of my mind in affirming, that is to say, in connecting together these two ideas, *God* and *just*, as agreeing with each other. And if I say, *God is not unjust*, *is*, being joined with the particle *not*, signifies the contrary action to that of affirming, to wit, that of *denying*, by which I regard these two ideas as repugnant to each other, since there is something contained in the idea of *unjust* which is contrary to what is contained in the idea of *God*.

But though every proposition contains necessarily these three things, yet, as we have said in the preceding chapter, it may have only two words, or even one alone. For men, wishing to abbreviate their speech, have made a multitude of words which express in themselves an affirmation—express, that is to say, what is signified by the substantive verb, and a certain attribute which is affirmed, besides. Such are all verbs except the substantive verb, as, *God exists*, *i. e. is existing*; *God loves men*, *i. e. God is loving men*. And the substantive verb, when it is alone, ceases to be purely substantive: as when I say, *I think*, *therefore I am*; because there is then joined to it the most general of attributes, which is being; for *I am* means *I am a being—I am something*.

There are also some other cases in which the subject and the affirmation are contained in a single word, as in the *first* and *second persons* of the verb, especially in Latin, as when I say, *Sum Christianus*; for the *subject* of this proposition is *ego*, which is contained in *sum*. Whence it ap-

pears, that in that language a single word makes a proposition in the first and second persons of verbs, which, by their nature, already contain the affirmation with the attribute, thus, *veni, vidi, vici*, are three propositions.

We see, from this, that *every proposition is affirmative or negative*, and that this is denoted by the verb which is affirmed or denied.

But there is *another difference of propositions* which arises from their *subject*, which is according as this is *universal, particular*, or *singular*. For terms, as we have already said in the First Part, are either *singular*, or *common*, or *universal*. And *universal* terms may be taken according to their *whole extension*, by joining them to universal signs, expressed or understood: as, *omnis, all*, for affirmation; *nullus, none*, for negation; all men, no man.

Or according to an *indeterminate part of their extension*, which is, when there is joined to them *aliquis, some*, as some man, some men; or others, according to the custom of languages. Whence arises a remarkable difference of propositions; for when the *subject of a proposition is a common term*, which is taken in *all its extension, propositions are called universal*, whether affirmative, as, *Every impious man is a fool*,—or negative, as, *No vicious man is happy*.

And when the common term is taken according to an *indeterminate part only of its extension*, since it is then restricted by the indeterminate word *some*, the proposition is called *particular*, whether it affirms, as, *some cruel men are cowards*,—or whether it denies, as, *some poor men are not unhappy*.

And if the subject of a proposition is *singular*, as when I say, *Louis XIII. took Rochelle*, it is called *singular*. But though this singular proposition may be different from the universal, in that its subject is not common, it ought, nevertheless, to be referred *to it*, rather than to the *particular*; for this very reason, that it is singular, since it is necessarily taken in *all its extension*, which constitutes the *essence* of a *universal proposition*, and which distinguishes it from the *particular*. For it matters little, so far as the universality of a proposition is concerned, whether its subject be great or small, provided that, whatever it may be, the whole is taken entire. And hence it is that

singular propositions take the place of universals in reasoning. Thus we may reduce all propositions to *four* sorts, which, in order to assist the memory, have been denoted by these four vowels—A, E, I, O :—

A. Universal affirmative: as, *Every vicious man is a slave.*

E. Universal negative: as, *No vicious man is happy.*

I. Particular affirmative: as, *Some vicious men are rich.*

O. Particular negative: as, *Some vicious men are not rich.*

The following two verses have been made for the better remembering of those :—

Asserit A, negat E, verum generaliter ambo,
Asserit I, negat O, sed particulariter ambo.

It is customary to call the universality or particularity of propositions *their quantity.* By *quality* is meant the *affirmation* or *negation*, which depends on the verb; and this is regarded as the *form* of a proposition.

Thus A and E agree in *quantity*, and differ according to *quality;* and so also with I and O.

But A and I *agree* according to *quality*, and *differ* according to *quantity;* and in the same way, E and O.

Propositions are divided, again, according to *their matter*, into *true* and *false.* And it is clear that there are none which are not either true or false, since every proposition denoting the judgment which we form of things is true when that judgment is conformed to truth, and false when it is not so conformed; since we are often in want of light to recognise true and false. Besides those propositions which appear to us certainly true, and those which appear certainly false, there are others which appear to us true, but whose truth is not so evident as to free us from all apprehension that they may be false, or which appear to us false, but of whose falsity we are not certainly sure. These are the propositions which we call *probable*, and the last *less probable.* We shall say something in the Fourth Part of what enables us to judge with certainty whether a proposition is true.

CHAPTER IV.

OF THE OPPOSITION BETWEEN PROPOSITIONS HAVING THE SAME SUBJECT AND ATTRIBUTE.

WE have said there are four sorts of propositions—A, E, I, O. We inquire now what agreement or disagreement they have together, when we make from the *same subject*, and the *same attribute*, different kinds of propositions. *This is what is called opposition.*

And it is easy to see that this opposition can be only of *three kinds*, though one of the three is divided into two others. For if propositions are opposed, both in *quantity and quality*, they are called *contradictories*, as A O, and E I, *every man is an animal, some man is not an animal, no man is free from sin, some man is sinless.* If they differ in *quantity alone*, and agree in *quality*, they are called *subalterns*, as A I, and E O, *every man is an animal, some man is an animal, no man is sinless, some man is not sinless.*

And if they differ *in quality*, and agree in *quantity*, they are then called *contraries*, or *sub-contraries*. Contraries, when they are universal, as *every man is an animal, no man is an animal.* Sub-contraries, when they are particular, as *some man is an animal, some man is not an animal.* In considering these opposed propositions, according to their truth or falsehood, we may easily determine—

1st, *That contradictories are never either true or false together*, but if one is true the other is false; and if one is false the other is true. For if it is true that every man is an animal, it cannot be true that some man is not an animal; and if, on the contrary, it is true that some man is not an animal, it is, consequently, not true that every man is an animal. This is so clear that it would only be obscured by further explanation.

2d, *Contraries can never be both true, but they may be often both false.* They can not be true because the contradictories would be true. For if it is true that *every*

man is an animal, it is false that *some man is not an animal*, which is the contradictory; and, by consequence, still more false that *no man is an animal*, which is the contrary. But the falsehood of one does not imply the truth of the other, for it may be false that all men are just, without its being true, on that account, that no man is just, since there may be just men, though all are not just.

3rd, *Sub-contraries, by a rule, quite opposed to that of contraries, may be both true*, as these, *some man is just, some man is not just*, because justice may belong to one part of men, and not to another; and thus the affirmation and negation do not regard the same subject, since *some men* is taken for one part of men, in one of the propositions, and for another in the other. But they *cannot be both false*, since otherwise the contradictories would be both false; for if it were false that *some men were just*, it would therefore be true that *no man was just*, which is the contradictory, and with much more reason that *some man is not just*, which is the sub-contrary.

4th, With *regard to the subalterns, there is not any true opposition*, since the particulars are consequents of the general, for if *all men* are animals, *some man* is an animal; if *no man is an ape, some man is not an ape*. Hence the truth of the universals involves that of the particulars, but the truth of the particulars does not involve that of the universals, for it does not follow, because it is true that some man is just, that it should be also true that every man is just; and on the contrary, the falsehood of particulars involves the falsehood of universals, for if it is false that some man is sinless, it is still more false that every man is sinless. But the falsity of the universals does not involve the falsity of the particulars, for although it may be false that every man is just, it does not follow that it is false to say that some man is just. Hence it follows that there are many cases in which these subalternate propositions are both true, and others in which they are both false.

We have said nothing of the reduction of propositions opposed to the same sense, because this is altogether useless, and because the rules which are given for it are, for the most part, true only in Latin.

CHAPTER V.

OF SIMPLE AND COMPOUND PROPOSITIONS—THAT THERE ARE SOME SIMPLE PROPOSITIONS WHICH APPEAR COMPOUND, AND WHICH ARE NOT SO, BUT MAY BE CALLED COMPLEX. —OF THOSE WHICH ARE COMPLEX IN THE SUBJECT, OR IN THE ATTRIBUTE.

We have said that every proposition ought to have a subject and an attribute; but it does not hence follow that it may not have more than one attribute. Those, therefore, *which have only one subject and one attribute*, are called *simple*, and those which have *more than one subject*, or *more than one attribute*, are called *compound*, as when I say—"Good and evil, life and death, poverty and riches, come from the Lord" —that attribute, *come from the Lord*, is affirmed, not of one subject alone, but of many, to wit, *of good and evil*, &c.

But before explaining these compound propositions, it must be remarked there are some which appear to be so, which are, nevertheless, simple; for the simplicity of a proposition is derived from the unity of subject and attribute. Now, there are many propositions which have, properly, only one subject and one attribute, but whose subject, or attribute, is a complex term, containing other propositions, which may be called *incidental*, which constitute only a part of the subject, or attribute, being joined by the relative pronoun *who*, *which*, whose property it is to join together many propositions so that they compose only one.

Thus when Jesus Christ says,—"He that doth the will of my Father which is in heaven, shall enter into the kingdom of heaven,"—the subject of this proposition contains two propositions, since it comprehends two verbs; but as they are joined together by *who*, they constitute only a part of the subject; whereas, when I say—*good and evil come from the Lord*—there is, properly, two subjects, since I affirm equally of the one and of the other that they come from God.

And the reason of this is, that propositions joined to others by *who* (qui), are either propositions which are only very imperfect, as will be shown further on, or are not so much considered as propositions which we there make, as propositions which have been made before, and which we just then only conceive as simple ideas. Whence it happens that it is indifferent whether we announce these propositions by adjective nouns, or by participles without verbs, and without the relative pronouns (who, which), or with verbs and the relative pronoun; for it is the same thing to say—*the invisible God created the visible world;* or, *God who is invisible created the world, which is visible. Alexander, the most generous of all kings, conquered Darius;* or, *Alexander, who was the most generous of all kings, conquered Darius.* And, in either case, my principal aim is not to affirm that God is invisible, or that Alexander was the most generous of kings; but, supposing each as declared before, I affirm of God, conceived as invisible, *that he created the visible world;* and of Alexander, conceived as generous, *that he conquered Darius.*

But if I were to say—*Alexander was the most generous of all kings, and the conqueror of Darius,* it is clear that I should affirm equally of Alexander, both that he was the most generous of all kings, and that he was the conqueror of Darius. And thus it is with reason, that these last kind of propositions are called *compound* propositions, while the others may be termed *complex* propositions.

Again, it must be remarked that these complex propositions may be of *two kinds*, for the complexity may fall either on the *matter of the proposition*, that is to say, on *the subject*, or on the *attribute*, or *on both*, or also on the *form alone.*

1st, The *complexity* falls on the *subject* when the *subject* is a *complex term*, as in this proposition—*every man who fears nothing is a king: the king is he who fears nothing.*

> Beatus ille qui procul negotiis,
> Ut prisca gens mortalium
> Paterna rura bobus exercet suis,
> Solutus omni fœnore.

For the verb *is* is understood in this last proposition—*beatus* is the attribute, and all the rest the subject.

2d, The complexity falls on the *attribute* when the attribute is a *complex term* : as, *Piety is a good which renders man happy in the greatest adversity.*

Sum pius Æneas famâ super æthera notus.

But it must be particularly noticed here, that all propositions compounded of active verbs and their objects, may be called *complex*, and contain, in some sort, *two propositions.* If I say, for example, *Brutus killed a tyrant*, this means Brutus killed some one, and he whom he killed was a tyrant; whence it happens that this proposition may be contradicted in two ways, either by saying—*Brutus killed no one*, or by saying that *he whom he killed was not a tyrant.* It is very important to notice this, because, when these kinds of propositions enter into argument, we sometimes prove only one part of them, and suppose the other, which often makes it necessary to reduce these arguments to a more natural form, by changing the active into the passive, in order that the part which is proved may be expressed directly, as we shall notice more at length in treating of the compound arguments, which arise from these complex propositions.

3d, Sometimes the *complexity falls upon both the subject and the attribute* : each being a complex term, as in this proposition—*the great who oppress the poor will be punished by God, who is the protector of the oppressed.*

Ille ego, qui quondam, gracili modulatus avenâ
Carmen, et egressus silvis, vicina coêgi
Ut quamvis avido, parerent arva colono;
Gratum opus agricolis: et nunc horrentia Martis
Arma virumque cano, Trojæ qui primus ab oris
Italiam, fato profugus, Lavinia venit
Littora.

The three first verses and a part of the fourth compose the *subject* of this proposition, the rest of it composes the *attribute*, and the affirmation is contained in the verb *cano.*

These are the three ways according to which propositions may be complex, in relation to their matter, that is, in relation to their subject and attribute.

CHAPTER VI.

OF THE NATURE OF INCIDENTAL PROPOSITIONS WHICH FORM PART OF COMPLEX PROPOSITIONS.

But before speaking of propositions whose *complexity* falls *on the form*, that is to say, on the *affirmation* or *negation*, there are several important remarks to be made on the *nature of incidental propositions*, which constitute part of the subject, or the attribute, of those which are complex, according to the matter.

1st, We have already seen that incidental propositions are those whose subject is the relative *who;* as, *men who are created to know and to love God;* or, *men who are pious:* taking away the term *men*, the rest is an incidental proposition. But we must remember here what was said in Chapter VIII., Part First,—that the addition of complex terms was of two kinds, one which may be called that of simple *explicatives*, which is, when the addition effects no change in the idea of the term, because that which is added agrees with it generally, and in all its extension: as in the first example—*men who are created to know and to love God.*

The other, which may be called *determinatives*, because what is added to a term does not belong to a term in all its extension, but *restricts and determines the signification of it*, as in the second example, *men who are pious.* Accordingly we may say there is a *who* explicative, and a *who* determinative. Now, when the *who* is explicative, the attribute of the incidental proposition is affirmed of the subject to which the *who* refers, although this may be only incidentally of the whole proposition, so that we may substitute the subject even for *who*, as may be seen in the first example, *men who are created to know and love God*, for we may say, *men were created to know and love God.*

But when the *who* is determinative, the attribute of the incidental proposition is not properly affirmed of the subject to which the *who* refers; for if, after having said, *men*

who are pious are charitable, we were to substitute the word *men* for *who*, in saying *men are pious*, the proposition would be false, for this would be to affirm the word pious of men as men; but in saying, *men who are pious are charitable*, we do not affirm of men in general, or of any men in particular, that they are pious; but the mind, connecting the idea of *pious* with that of *men*, and making them a total idea, judges that the attribute *charitable* agrees to that total idea; and thus all the judgment which is expressed in the incidental proposition is solely that by which our mind judges that the idea of *pious* is not incompatible with that of *men*, and that thus it may be considered as united with it, and that afterwards it may be examined with what agrees with them in relation to this union.

2d, There are often terms which are doubly or trebly complex, being composed of many parts, each of which is in itself complex; and thus there may be found in it divers incidental propositions, and of various kinds; the *who* or *which* of one may be determinative, and the *who* or *which* of another, explicative. This will be seen better by an example. *The doctrine which places the sovereign good in bodily pleasure, which was taught by Epicurus, is unworthy of a philosopher.* This proposition has for attributes *unworthy of a philosopher*, and all the rest for subject. Thus the subject is a complex term, which contains two incidental propositions,—the first is, *which places the sovereign good in bodily pleasure.* The *which*, in this incidental proposition is *determinative*, for it determines the word *doctrine*, which is general, to that which affirms that the *sovereign good of men is found in bodily pleasure;* whence it happens, that we cannot, without absurdity, substitute the word *which* for the word doctrine, saying, *doctrine places the sovereign good in bodily pleasure.* The *second* incidental proposition is, *which was taught by Epicurus*, and the subject to which this *which* refers, is the whole complex term, *the doctrine which places the sovereign good in bodily pleasure*, which indicates the doctrine singular and individual, capable of various accidents, as of being maintained by different men, although it is determined in itself to be always taken in the same sense, at least in this particular point, according to which it is understood, and this is why the

which of the second incidental proposition, *which was taught by Epicurus*, is not determinative, but solely *explicative*, whence it happens that we may not substitute the subject to which this *which* refers, in the place of it, saying, *The doctrine which places the sovereign good in bodily pleasures was taught by Epicurus.*

3d, The last remark is, that in order to judge of the nature of these propositions, and to know whether the relative pronoun (*who*, *which*) is *determinative* or *explicative*, we must often pay more attention to the meaning and intentions of the speaker than to the simple expression, for there are often complex terms which appear incomplex or less complex, than they really are, for a part of that which is in the mind of the speaker is understood and not expressed, according to what was said in Chap. VIII., Part I., where we showed that nothing was more common in men's discourse, than to denote individual things by common names, because the circumstances of the discourse sufficiently show that there is joined to that common idea which is joined to the word, an individual and distinct idea, which determines it to signify only a single thing.

We have said that this commonly appeared from circumstances, as in the mouth of a Frenchman the word *king* signifies Louis XIV. But the following is a rule that may enable us to judge when a common term remains in its general idea, and when it is determined by an idea distinct and particular, though not expressed: *when there is a manifest absurdity in connecting the attribute with the subject remaining in its general idea, we must believe that he who uttered this proposition did not leave that subject in its general idea.* Thus, if I hear it said by a man, *Rex hoc mihi imperabit, the king commanded me to do such a thing*, I am assured he did not leave the word *king* in its general idea, for king, in general, can give no particular command.

If a man said to me, *the "Brussels Gazette" for the 14th of January 1662, relating to what passed in Paris, is false*, I should be sure that he had something in his mind beyond what these terms express, since all this will not enable him to judge whether the Gazette were true or false, and that hence it must be that he had in his mind *some distinct and particular news*, which he judged contrary to truth, as for

instance, if that "Gazette" had said *that the king had made a hundred knights of the order of the Holy Ghost.*

So also, in the judgments which are made of the opinions of philosophers, when any one says that the *doctrine of such a philosopher is false*, without distinctly expressing what that doctrine is, as *that the doctrine of Lucretius touching the nature of the soul is false.* It must necessarily be that those who form these kinds of judgments have in their minds a distinct and *particular opinion* under the general term, *doctrine of such a philosopher*, since the quality of falseness cannot belong to a doctrine, as being of such an author, but only as being such an opinion in particular contrary to truth. And thus these kinds of propositions necessarily resolve themselves into the following: *such an opinion which was taught by such an author, is false; the opinion that our soul is composed of atoms, which was taught by Lucretius, is false.*

So that these judgments involve always *two affirmations*, even when they are not distinctly expressed;—one, *principle*, which regards *truth in itself*, which is, that it is a great error to maintain that the soul is composed of atoms; the *other, incidental*, which regards only a point of history, which is that error was taught by Lucretius.

CHAPTER VII.

OF THE FALSITY THAT MAY BE MET WITH IN COMPLEX TERMS AND INCIDENTAL PROPOSITIONS.

WHAT we have said may enable us to resolve a celebrated question, which is, *Whether falsehood is to be found only in propositions*, or whether it does not also enter into *ideas* and *simple terms?*

I speak of falsehood rather than of truth, because there is a truth which is in things in relation to the mind of

God, whether men think it, or whether they do not; but falsehood can only be in relation to the *mind of man*, or to some mind subject to error, which judges falsely that a thing is that which it is not.

It is asked, then, whether this falseness is only found in *propositions* and in *judgments?* We reply commonly *no*,—which is true in a sense; but this does not secure that there shall not be sometimes falsehood, not in *simple ideas* but in *complex terms*, since it is enough for this that there be some judgment and affirmation, either expressed or understood.

We shall understand this better by considering in detail *two sorts of complex terms*, in one of which the *who* is explicative—in the other, determinative.

We need not wonder that falsehood is to be found in the first kind of complex terms, since here the attribute of the incidental proposition is affirmed of the subject to which the relative refers. *Alexander, who was the son of Philip:* I affirm of Alexander, although incidentally, that he was the son of Philip; and, consequently, if it be not so, there is falsehood in this.

But two or three things, which are important, must be remarked here:—

1st, That the *falsehood of the incidental proposition* does not commonly *affect the truth of the principal proposition;* for example, *Alexander, who was the son of Philip, conquered the Persians.* This proposition ought to be considered true, though Alexander be not the son of Philip; since the affirmation of the principal proposition falls only on Alexander, and that which is incidentally connected with it, though false, does not prevent it being true, that Alexander conquered the Persians. If, however, the attribute of the principal proposition be related to the incidental proposition, as if I were to say, *Alexander, the son of Philip, was the grandson of Amyntas*,—in this case only would the falsehood of the incidental proposition make the principal proposition false.

2d, The titles which are commonly given to certain dignitaries may be given to all those who possess these dignities, though that which is signified by the title may not belong to them at all. Thus, because formerly the

title of *holy*, and of *very holy*, was given to all bishops, we see that the Catholic bishops, in the Council of Carthage, did not hesitate to bestow that name on Donatist bishops: *Sanctissimus Petillianus dixit*, although they knew well that holiness could not belong to a schismatic bishop. We see also that Paul, in the Acts, gives the title of *very excellent* to Festus, governor of Judea, because that was the title commonly given to these governors.

3d, The case is different when a man is the author of the title which he gives to another, and which he gives to him, not according to the opinion of others, or according to popular error, but for himself alone; for we may then, with justice, impute to him the falsehood of these propositions. Thus, when a man says, *Aristotle, who is the prince of philosophers*, or simply, the *prince of philosophers*, believed that the origin of the nerves was in the heart, we ought not to tell him that this is false, because Aristotle is not the best of philosophers; for it is enough that he followed, in this, the common opinion, though false. But if any one said, *Gassendi, who was the most able of philosophers, believes that there was a void in nature*, we might dispute with such a man the quality which he wished to bestow on Gassendi, and make him responsible for the falsehood which we might maintain was to be found in that incidental proposition. He may, therefore, be accused of falsehood in giving to the same person a title which does not belong to him, and we cannot be accused of it in giving to him another which belongs to him still less in truth. For example, *the pope, John XII., was neither holy, chaste, nor pious*, as Baronius allows; and yet those who should call him *very holy* could not be accused of falsehood, and those who called him *very chaste*, or *very pious*, were great liars, although they may only have done this by incidental propositions, as if they were to say, *John XII., a very chaste pontiff, ordained such a thing.*

So much touching the first kind of incidental propositions, in which the relative (*who, which*), is *explicative.*

In relation to the *others*, where the relative is *determinative*, as *a man who is pious,—kings who love their people,*—it is certain that, in general, they are not susceptible of falsehood, since the attribute of the incidental proposition is

not affirmed of the subject to which the relative refers. For if we say, for example, *that judges who never do anything by request or favour are worthy of praise*, we do not say, on that account, that there is any judge in the world who has attained to that perfection; nevertheless I believe that there is always in these propositions a *tacit* or *virtual affirmation*, not of the *actual* agreement of the attribute with the subject to which the *who* refers, but of its *possible* agreement. And if an error be committed here, I believe we shall have reason to hold that there may be falsehood in these incidental propositions, as if, for example, it were said, *Minds which are square are more solid than those which are round;* the idea of *square* and *round* being incompatible with the idea of mind, taken for the principle of thought, I hold that such incidental propositions ought to be reckoned false.

We may even say that a greater number of errors spring from this; for, having the idea of a *thing*, we often join to it another idea which is incompatible with it, although, through error, we believed it compatible, which leads us to attribute to this idea that which never belonged to it.

Thus, finding in ourselves two ideas, that of a *substance which thinks*, and that of a *substance extended*, it often happens, that when we consider our soul, which is a substance which thinks, we mingle insensibly with it something of the idea of a substance extended, as when we imagine that our soul must fill a space as the body does, and that it could not exist if it had no parts,—things which belong exclusively to the body; and hence has arisen the impious error of those who believe the soul to be mortal. We may see an excellent discourse on this subject by St Augustine, in the Tenth Book of the Trinity, where he shows that there is nothing which may be known more easily than the nature of the soul. But that which perplexes men is this, that, wishing to know it, they are not satisfied with that which they may know without difficulty, that it is a substance which thinks, wills, doubts, knows, but they join to what *it is*, that which *it is not*, striving to imagine it under some of those forms through which they are accustomed to conceive of corporeal things.

When, on the other hand, we consider *body*, we have

very great difficulty in consequence of mingling with it something of the idea of that which thinks, which leads us to say of heavy bodies, they *incline* towards a centre; of plants, that they *seek* the nourishment which is proper for them; of the crisis of a malady, that it is nature which is *striving* to get rid of that which offends it; and of a thousand other things especially in our body, that nature *wishes* to do this or that, though we are well assured that we have not willed it, nor thought anything about it; and it is ridiculous to imagine that there is *in us* anything else beside *ourselves* which knows what is suitable or hurtful, which seeks the one and avoids the other.

I believe that it is to this mixture we may attribute all the complaints which men make against God; for it would be impossible to murmur against God if we conceived of him truly as he is—all-powerful, all-wise, and all-good. But wicked men, conceiving of him as all-powerful, and as the sovereign ruler of all the world, attribute to him all the evils which happen to them, wherein they are right. And since, at the same time, they conceive him cruel and unjust, which is incompatible with his goodness, they rail against him, as though he had done them wrong in laying upon them the evils which they suffer.

CHAPTER VIII.

OF COMPLEX PROPOSITIONS IN RELATION TO AFFIRMATION AND NEGATION, AND OF A SPECIES OF THESE KINDS OF PROPOSITIONS WHICH PHILOSOPHERS CALL *Modals*.

BESIDE the propositions of which the subject, or the attribute, is a complex term, there are others which are *complex*, because they have *incidental terms, or propositions*, which regard only the form of the proposition, that is to

say, the affirmation, or negation, which is expressed by the verb: as, if I say,—*I maintain that the earth is round*—I *maintain* is only an incidental proposition, which must be a part of something in the principal proposition. Yet, it is clear that it makes no part either of the subject or the attribute, for it makes no change in them at all; and they would be conceived in precisely the same way, if I said, simply, *the earth is round.* And thus it can belong only to the affirmation, which is expressed in two ways, the one, which is the usual, by the verb *is*,—*the earth is round*, and the other more expressly by the verb *I maintain.*

In the same way, when it is said, *I deny that it is true, it is not true;* or when we add in a proposition that which supports its truth: as when I say—*the reasons of astronomy convince us that the sun is much larger than the earth;* for that first part is only a support of the affirmation.

It is, nevertheless, important to notice that there are some of these kinds of propositions which are ambiguous, and which may be differently taken, according to the design of him who utters them: as if I say,—*all philosophers assure us that heavy things fall downwards of themselves.* If my design is to show that heavy things fall downwards of themselves, the first part of this proposition would be incidental, and would serve only to support the affirmation of the last part; but if, on the contrary, my design is merely to express this as the opinion of philosophers, without affirming it myself, then the first part will be the principal proposition, and the last would be only a part of the attribute. For what I should affirm would not be that *heavy things fall of themselves*, but simply, *that all philosophers maintain* this: and it is clear that these two different ways of taking this same proposition, so change it, that it constitutes two different propositions which have altogether different meanings. But it is generally easy to determine by the context which of these two senses we are to take. For example, if, after having uttered that proposition, I were to add—*now stones are heavy*—it would be clear that I had taken it in the first sense, and the first part was only incidental; but if, on the contrary, I were to conclude thus—*now this is an error, and, consequently, it is possible that an error may be taught by all philosophers*—it would be manifest that I had taken

it in the second sense, that is to say, that the first part was the principal proposition, and that the second was only part of the attribute.

Of these complex propositions, where the complexity falls on the verb, and not on the subject or the attribute, philosophers have specially noticed those which have been called *modals*, because the affirmation or negation has been qualified in them by one of these four *modes*,—*possible, contingent, impossible, necessary*. And, since each mode may be affirmed or denied, as it is impossible, it is not impossible, and, in both respects, may be joined by a proposition, affirmative, or negative, as, *the earth is round, the earth is not round*—each mode may have *four propositions*, and, the four together, sixteen, which have been denoted by these four words: *Purpurea, Iliace, Amabimus, Edentuli*,—the whole mystery of which is, that each syllable denotes one of the four modes.

First—possible.
Second—contingent.
Third—impossible.
Fourth—necessary.

And the vowel which is found in each syllable, which is either A, or E, or I, or U, points out whether the mode ought to be affirmed or denied, and whether the proposition which is termed *dictum* ought to be affirmed or denied in that way.

A.—The affirmation of the mode, and the affirmation of the proposition.

E.—The affirmation of the mode, and the negation of the proposition.

I.—The negation of the mode, and the affirmation of the proposition.

U.—The negation of the mode, and the negation of the proposition.

It would only be loss of time to bring examples which may easily be found; it is only necessary to observe, that Purpurea answers to A of complex propositions, Iliace to E, Amabimus to I, Edentuli to U; and that thus if we

wish our examples to be true, we must, having found a subject, take for *purpurea* an attribute which may be universally affirmed of it; for *iliace* one which may be universally denied of it; for *amabimus* one that may be particularly affirmed of it; and for *edentuli* one that may be particularly denied of it.

But whatever attribute may be taken, it is always true that all the four propositions for the same word have only the same sense, so that one being true, all the rest are so.

CHAPTER IX.

OF DIFFERENT KINDS OF COMPOUND PROPOSITIONS.

We have already said that compound propositions are those which have either a double subject, or a double attribute. Now, of these there are two kinds, the one where the composition is denoted expressly, and the other where it is more concealed, which logicians have, for this reason, called *exponibles*, since they need to be expounded or explained.

We may reduce those of the first kind to *six* species.—*Copulatives* and *disjunctives*, *conditionals* and *causals*, *relatives* and *discretives*.

COPULATIVES.

We call copulatives those which contain either several subjects, or several attributes, united by an affirmative or negative conjunction, that is to say, by *and*, or *neither*; for *neither* produces the same effect as *and*, since *neither* signifies *and*, and a *negation*, which falls on the verb, and not on the union of the two words which it joins: as, if I say, —*knowledge and riches do not render a man happy*—I as

much unite knowledge to riches, in affirming of both that they do not render a man happy, as if I said—*knowledge and riches render a man vain.*

We may distinguish three kinds of these propositions.

1st, When they have *several subjects.*

Mors et vita in manibus linguæ.

Death and life are in the power of the tongue.

2d, When they have *several attributes.*

Auream quisquis mediocritatem
Diligit, tutus, caret obsoleti
Sordibus tecti, caret invidenda
Sobrius aula.

He who loves moderation, which is desirable in all things, lives neither sordidly nor superbly.

Sperat infaustis, metuit secundis
Alteram sortem, bene præparatum
Pectus.

A well regulated mind hopes for prosperity in adversity, and fears adversity in prosperity.

3d, When they have *several subjects* and *several attributes.*

Non domus et fundus, non æris acervus et auri,
Aegroto Domini deduxit corpore febres,
Non animo curas.

Neither houses, nor lands, nor the greatest heaps of gold and silver, can chase away fevers from the body, or cares from the mind of their possessors.

The truth of these propositions depends on the truth of both parts: thus, if I say—*faith and a good life are necessary to salvation.* This is true, because both are necessary; but if I said, good life and *riches* are necessary to salvation, this proposition would be false, since, although good life is thus necessary, riches are not.

Propositions which are considered as negative and contradictory, in relation to the copulatives, and to all the other compound ones, are not all those in which negations are found, but only those in which the negation falls on

the conjunction; and this happens in different ways, as by placing the *not* at the top of the proposition—*Non enim amas et deseris*, says St Augustine,—that is to say, you must not believe you love any one when you desert him.

For it is in the same way we render a proposition contradictory, the contradictory, or copulative, by expressly denying the conjunction: as when we say—it cannot be that a thing should be, at the same time, this and that.

That we cannot be in love, and be wise.
Amare et sapere vix Deo conceditur.
That love and majesty do not agree together.
Non bene conveniunt, nec in una sede morantur, majestas et amor.

DISJUNCTIVES.

Disjunctives are of great service, and are those into which the disjunctive conjunction, *vel*, *or*, enters:—

Friendship either finds friends equal, or renders them so.
Amicitia pares aut accipit, aut facit.
A woman loves or hates; there is no medium.
Aut amat aut odit mulier; nihil est tertium.
He who lives in utter solitude is either a beast or an angel (says Aristotle).
Men act only through interest, or through fear.
The earth moves round the sun, or the sun round the earth.
Every deliberate action is either good or evil.

The truth of these propositions depends on the necessary opposition of the parts, which ought to admit of no medium. But as, in order to be necessarily true, they must admit of none at all, it suffices that they do not ordinarily admit of any, in order to be considered as morally true. Hence it is absolutely true that an action done deliberately is good or bad, since theologians prove that there are none which are indifferent; but when it is said that men act only through interest, or through fear, it is not absolutely true, since there are some who act from neither of these passions,

but from consideration of their duty: and thus all the truth which it contains is, that these are the two motives which influence the majority of men.

The propositions which are contradictory to the disjunctives are those in which we deny the truth of the disjunction; which is done in Latin by putting the negation at the beginning, as in all the other compound propositions: *Non omnis actio est bona vel mala;* and in our language, *It is not true that every action is either good or bad.*

CONDITIONALS.

Conditionals are those which have two parts united by the condition *if*, whereof the first that contains the condition is called the *antecedent*, and the other the *consequent*. *If the soul is spiritual*, is the antecedent,—*it is immortal*, is the consequent.

This consequence is sometimes *mediate*, and sometimes *immediate*. It is mediate only when there is nothing in the terms of either part which binds them together, as when I say:—

If the earth is immoveable, the sun turns round.
If God is just, sinners will be punished.

These consequences are very good, since the two parts, having no common term, are connected together only by that which is in the mind, and which is not expressed; that the earth and the sun, being found continually in different situations with regard to each other, it necessarily follows, that if one is immoveable, the other moves.

When the consequence is immediate, it must generally be,

1st, Either when the two parts have the same subject:
If death is a passage to a happier life, it is desirable.
If you have failed to nourish the poor, you have destroyed them.
Si non pavisti, occidisti.

2d, Or when they have the same attribute:

If all trials from God should be dear to us,
Afflictions ought to be so.

3d, Or when the attribute of the first part is the subject of the second:

If patience be a virtue,
There are painful virtues.

4th, Or, lastly, when the subject of the first part is the attribute of the second, which can only be when the second part is negative:

If all true Christians live according to the Gospel,
There are few true Christians.

We consider, in relation to these propositions, only the truth of the consequence; for although both parts were false, nevertheless, if the consequence of one or the other is good, the proposition, so far as it is conditional, is true, as:

If the will of the creature is capable of preventing the absolute will of God from being accomplished,
God is not almighty.

Propositions considered as negative or contradictory to the conditionals, are those only in which the condition is denied, which is accomplished in Latin by placing the negation at the beginning:

Non, si miserum fortuna Sinonem
Finxit, vanum etiam mendacemque improba finget.

But in our language we express these contradictions by *although*, and a negation:

If you eat of the forbidden fruit, you shall die.
Although you should eat of the forbidden fruit, you shall not die.

Or equally well by—*It is not true that if ye eat of the forbidden fruit ye shall die.*

CAUSALS.

Causals are those which contain two propositions con-

nected by a *causal* particle, *quia, because,*—or *ut, to the end that:*

Wo to the rich, because they have their comfort in this world.

The wicked are exalted, in order that, falling from a greater height, their downfal may be greater.

Tolluntur in altum,
Ut lapsu graviore ruant.

They are able, because they believe they are able.

Possunt quia posse videntur.

Such a prince was unhappy, because he was born under a certain constellation.

We may also reduce to these kinds of propositions those which are called *reduplicatives:*

Man, as man, is reasonable.

Kings, as kings, depend on God only.

For the truth of these propositions, it is necessary that one of the parts be the cause of the other, which makes it also necessary that both be true; for that which is false is not a cause, and has not a cause; but both parts may be true, and yet the causal connection false, because it is enough for this, that one of the parts be not the cause of the other. Thus a prince may have been unfortunate, and may have been born under such a constellation, while it may still be false that he was unhappy *because* he was born under that constellation.

Hence the contradictories of these propositions consist properly in this, that we deny the one to be the cause of the other:

Non ideo infelix, quia sub hoc natus sidere.

RELATIVES.

Relatives are those which involve *comparison* and some *relation:*

Where the treasure is, there the heart is also.

As a man lives, so he dies.

Tanti es, quantum habeas.
You are valued in the world in proportion to your wealth.

The truth depends on the justness of the relation, and we contradict them by denying the relation:
It is not true, that as a man lives, so he dies.
It is not true that we are valued in the world in proportion to our fortune.

DISCRETIVES

Are those in which we make *different judgments*, denoting that difference by the particles *sed, but,—tamen, nevertheless*, or others like these, expressed or understood:

Fortuna opes auferre, non potest animum.
Fortune may take away wealth, but it cannot take away virtue.
Et mihi res, non me rebus submittere conor.
I try to place myself above circumstances, not to be the slave of them.
Cœlum non animum mutant qui trans mare currunt.
They who cross the seas change only the country, not the disposition.

The truth of this sort of proposition depends on the two parts, and the separation that is made between them; for, though both the parts were true, a proposition of this kind would be ridiculous if there was no opposition between them: as, if I said—
Judas was a thief, and yet he would not suffer Magdalene to pour perfumes on Jesus Christ.
A proposition of this sort may have many contradictories, as if it were said—
Happiness does not depend on riches but upon knowledge.
We may contradict this proposition in all these ways:
Happiness depends on riches, and not upon knowledge.
Happiness depends neither upon riches nor knowledge.
Happiness depends upon riches and knowledge.

Thus we see that copulatives are the contradictories to the discretives, for these two last propositions are copulatives.

CHAPTER X.

OF PROPOSITIONS WHICH ARE COMPOUND IN MEANING.

THERE are other compound propositions whose composition is more concealed, these we may reduce to the four following kinds:—1. *Exclusives.* 2. *Exceptives.* 3. *Comparatives.* 4. *Inceptives*, or *Desitives.*

1. EXCLUSIVES.

We call *exclusives* those which indicate that the attribute agrees with the subject, and that it agrees with *that subject only*, which denotes that it agrees with no others; whence, it follows that they contain two different judgments, and that they are, consequently, compound in meaning. This is expressed by the word *alone*, or some other like it—(ôr, in French, *il n'y a*)—God alone is worthy of being loved for his own sake.

Deus solus fruendus, reliqua utenda.

That is to say, we ought to love God for his own sake, and to love other things for God's sake.

Quas dederis solas semper habebis opes.

The only riches which will remain with you are those which you have freely given away.

Nobilitas sola est atque unica virtus.

Virtue alone is true nobility.

Hoc unum scio quod nihil scio, said the Academics.

It is certain that there is nothing certain, and there is only obscurity and uncertainty in everything else.

Lucian, speaking of the Druids, gives these disjunctive propositions composed of two exclusives:

Solis nosse deos, et cœli numina vobis,
Aut solis nescire datum est.

Either you know the gods, while all besides are ignorant of them;

Or, you are ignorant of them, while all others know them.

These propositions are contradicted in three ways; for,

1st, It may be denied that what is said to agree with a single subject does not agree with it at all.

2d, It may be maintained that it agrees with something else.

3d, Both may be maintained.

Thus, against this sentence, *that virtue alone is true nobility*, we may say—

1. That virtue alone does not confer nobility.
2. That birth confers nobility as well as virtue.
3. That birth confers nobility, and not virtue.

Thus, that maxim of the Academics, *that it is certain that there is nothing certain*, was contradicted differently by the Dogmatists and the Pyrrhonists; for the Dogmatists opposed it, by maintaining that it was doubly false, since there are many things which we know with the utmost certainty, and that thus it was not true that we were certain of knowing nothing; and the Pyrrhonists also said that it was false, for a contrary reason, viz., that it was even uncertain whether there were nothing certain.

Hence, there is a defect of judgment in what Lucian said of the Druids, since it was not necessary that the Druids held the truth in relation to the gods, or that they only were in error; for, since different errors may be held touching the nature of God, it might easily happen, although the Druids had opinions touching the nature of a God different from other nations, they were not less in error than other nations.

What is more remarkable, is, that there are propositions of this kind which are exclusives in sense, although the exclusion may not be expressed: thus that verse of Virgil in which the exclusion is denoted—

Una salus victis nullam sperare salutem,
Has been happily translated by this French verse, by which the exclusion is understood.

Le salut des vaincus est de n'en point attendre.
The safety of the vanquished is to look for none.

It is, however, much more common, in Latin, to understand exclusions, so that there are often passages which cannot be translated in all their force, although, in Latin, the exclusion may not be expressed.

Thus—2 Corinthians, x. 17.—*Qui gloriatur in domine glorietur*—ought to be translated: He who glories, let him glory in the Lord alone.

Galat. vi. 7.—*Quæ seminaverit homo, hæc et metet.*
A man shall reap only that which he has sown.

Ephes. iv. 5.—*Unus Dominus, una fides, unum baptisma.*
There is only one Lord, one faith, and one baptism.

Matt. v. 46.—*Si diligitis eos qui vos diligunt, quam mercedem habebitis?*
If you love those only who love you, what reward do you deserve?

Seneca in his Troad.—*Nullas habet spes Troja, si tales habet.*
If Troy has only this hope, it has none: as if he had said—*Si tantum tales habet.*

2. EXCEPTIVES.

Exceptives are those in which we affirm a thing of a whole subject, with the exception of certain inferiors of that subject, to which we show, by some exceptive particles, that this does not belong. This clearly involves two judgments, and thus renders these propositions compound in sense: as when I say—

None of the ancient philosophers, except the Platonists, recognised the spirituality of God. This means two things. First, that the ancient philosophers believed God corporeal; second, that the Platonists believed the contrary.

Avarus nisi cum moritur, nihil recte facit.
The avaricious man does no good, except by dying.

Et miser nemo, nisi comparatus.

No one thinks himself miserable, except by comparing himself with those who are more happy.

Nemo læditur nisi a seipso.

We have no evil, except what we do to ourselves

Except the wise man, said the Stoics, all men are truly fools.

These propositions may be contradicted in the same way as the exclusives.

1. By maintaining that the wise man of the Stoics was a fool as well as other men.
2. By maintaining that there were others, besides their wise man, who were not fools.
3. By affirming that the wise man of the Stoics was a fool, and that other men were not.

It must be remarked that the exclusive and the inceptive propositions are, if we may so speak, only the same thing expressed somewhat differently, so that it is always very easy to change them reciprocally from the one to the other; and thus we see that exceptive proposition of Terence—

Imperitus, nisi quod ipse facit, nihil rectum putat.

has been changed by Cornelius Gallus into that exclusive—

Hoc tantum rectum quod facit ipse putat.

3. COMPARATIVES.

Propositions in which we compare contain two judgments, since it is one thing to say that a thing is such, and another thing to say that it is more or less such, than another; and thus these kinds of propositions are compound in sense.

Amicum perdere, est damnorum maximum.

The greatest of all losses is the loss of a friend.

Ridiculum acri
Fortius ac melius magnas plerumque secat res.

We often produce more impression, even in most important matters, by a little agreeable raillery, than by argument.

Meliora sunt vulnera amici quam fraudulenta oscula inimici.

Better are the blows of a friend than the treacherous kisses of an enemy.

These propositions may be contradicted in many ways: as, that maxim of Epicurus,—that pain is the greatest of all evils,—was contradicted in one way by the Stoics, and in another way by the Peripatetics; for the Peripatetics allowed that pain was an evil, but maintained that vices, and other irregularities of the mind, were much greater evils, whereas, the Stoics would not even acknowledge pain to be an evil, so far were they from admitting that it was the greatest of all evils.

There is a question which may be here discussed, viz.: Whether it is always necessary, in these propositions, that the positive or the comparative belong to both members of the comparison; and if, for instance, it is necessary to suppose that two things are good, before we can say that one is better than the other. It appears at first that this must be so; but custom is opposed to it, since we see that the Scriptures employ the word better, not only in comparing together two things which are good: *melior est sapientia quam vires, et vir prudens quam fortis.* Wisdom is better than strength, and the prudent man than the strong man. But also in comparing a good with an evil, *melior est patiens arrogante.* A patient man is better than a proud one.

And even in comparing two evils together, *melius est habitare cum dracone, quam cum muliere litigiosa.* It is better to live with a dragon than with a quarrelsome woman. And in the Gospel, It is better that a man be cast into the sea, with a stone about his neck, than to scandalize the least of the faithful.

The reason of this usage is that a larger good is better than a smaller one, because there is more of goodness in it than a smaller good. Now, for the same reason, though with less propriety, we may say that a good is better than an evil, because it has more of goodness in it than that which has none. And we may also say that a smaller evil is better than a larger evil, since the diminution of evil, holding the place of good among evils, that which is

less bad has more of his kind of goodness than that which is worse.

We should therefore avoid the unnecessary embarrassment which arises in the heat of debate, from wrangling on these forms of speech, as was done by a Donatist grammarian named Cresconius, in writing against St Augustine, that saint having said that the Catholics had more reason to reproach the Donatists with having abandoned the sacred books, than the Donatists had to reproach the Catholics, *traditionem nos vobis probabilius objicimus*, Cresconius imagined that he might conclude from these words that St Augustine allowed that the Donatists had ground to reproach the Catholics, *Si enim vos probabilius*, says he, *nos ergo probabiliter; nam gradus iste quod ante positum est auget non quod ante dictum est, improbat.* But St Augustine, first refuted that vain subtilety by examples from the Scriptures, and among others, that passage in the epistle to the Hebrews, in which St Paul, having said that that ground which bore only thorns, was accursed, and fit only for the fire, adds, *confidimus autem de vobis fratres carissimi meliora, non quia*, says that Father, *bona illa erant quæ supra dixerat, proferre spinas et tributos, et ultionem mereri, sed magis quia mala erant ut illis devitatis meliora eligerent et optarent, hoc est, mala tantis bonis contraria.* And then he showed him, from the most celebrated authors of his art, how false this consequence was, since he might, in the same way, reproach Virgil with having reckoned as a good thing the violence of a disease which leads men to tear themselves with their own teeth, because he wishes a better fortune to good people :

> Dii meliora piis, erroremque hostibus illum ;
> Discissos nudis laniabant dentibus artus ;

Quomodo ergo meliora piis, says that Father, *quasi bona essent istis, ac non potius magna mala qui discissos nudis laniabant dentibus artus.*

4. INCEPTIVES OR DESITIVES.

When we say that a thing has commenced or ceased to

be such, we form two judgments,—one, what the thing was before the time of which we speak, the other, what it is after; and thus these propositions of which the one class is called *inceptives*, the other *desitives*, are compound in sense, and they are so like that it is more to the purpose to consider them as only one species, and treat of them together.

The Jews commenced, after the return from the captivity of Babylon, to disuse their ancient characters, which are those which are now called the Samaritan.

1, *The Latin language has, for five hundred years, ceased to be common in Italy.*

2, *The Jews did not begin to use points for marking the vowels until five hundred years after Christ,*

These propositions may be contradicted, according to either of their relations to the two different times. Thus some are contradicted last, by maintaining, though falsely, that the Jews always used points, at least for their books, and that these were kept in the temple; and others contradicted it by maintaining the contrary, *i.e.*, by saying that the use of points is still later than the fifth century.

GENERAL REFLECTIONS.

Although we have showed that the propositions—exclusive, exceptives, &c.—may be contradicted in several ways, it is nevertheless true, that when we deny them simply, without any further explanation, the negation falls naturally on the exclusion, on the exception, on the comparison, on the change denoted by the words of beginning and of ending. Hence, if a man believes that Epicurus did not place the chief good in bodily pleasure, and it were told him *that Epicurus alone placed in it the chief good;* if he denied this simply, without adding anything else, it would not fully express his opinion, because it might be believed, from that simple negation, that he still allowed that Epicurus had indeed placed the sovereign good in bodily pleasure, but that he believes that he was not alone in that opinion.

In the same way, if, knowing the probity of a judge,

any one should ask me *if he sold justice still*, I could not simply reply by saying *no*, since the *no* would signify that he did not sell it now, but would leave it to be inferred, at the same time, that I allowed that he had formerly sold it.

Hence it may be seen that there are some propositions which it would be unjust to demand that any one should answer simply by *yes* or *no*, since, as they involve two senses, no one could not justly reply to them without explaining himself in relation to both.

CHAPTER XI.

OBSERVATIONS FOR THE PURPOSE OF DISCOVERING THE SUBJECT AND THE ATTRIBUTE IN CERTAIN PROPOSITIONS EXPRESSED IN AN UNUSUAL MANNER.

It is doubtless a defect in common logic, that those who study it are accustomed to find out the nature of propositions or reasonings, only as they follow the order and arrangement according to which they are fashioned in the schools, which is often very different from that according to which they are fashioned in the world, and in books—whether of eloquence, or of morals, or of other sciences. Thus we have scarcely any other idea of subject and attribute, except that the one is the first term of a proposition, and the other the last;—and of universality and particularity, except that there is in the one *omnis* or *nullus*, *all* or *none*,—and in the other, *aliquis*, *some*.

Nevertheless all this leads astray very often, and it is necessary to exercise judgment in order to discriminate these things in many propositions. We will commence with the subject and attribute.

The sole and the true rule is, *to consider by the sense that of which we affirm*, and *that which we affirm;* for the *first* is always the *subject*, and the *last* the *attribute*, in whatever order they may be found.

Thus there is nothing more common in Latin than such propositions as these:—*Turpe est obsequi libidini*,—It is disgraceful to be a slave of one's passions;—in which it is plain from the sense, that *turpe*, disgraceful, is that which we affirm, and, consequently, the attribute; and *obsequi libidini* that of which we affirm, *i. e.* what we declare to be disgraceful, and, consequently, the subject. So again, in St Paul, *Est quæstus magnus pietas, cum sufficientia*; the true order will be, *Pietas cum sufficientia est quæstus magnus.*

So also in these verses,—

Felix qui potuit rerum cognoscere causas;
Atque metus omnes, et inexorabile fatum
Subjecit pedibus strepitumque Acherontis avari;

Felix is the attribute, and the rest the subject.

The subject and the attribute are often still more difficult to discover in complex propositions; and we have already seen that we can sometimes only judge by the sequel of the discourse, and the intention of the author, which is the principal proposition, and which the incidental, in such propositions.

But, in addition to what we have already said, we may further remark, that in those complex propositions, in which the first part and the last are the principal, as in the major and the conclusion of the following reasoning:—

God commands us to honour kings;
Louis XIV. is king;
Therefore God commands us to honour Louis XIV.

It is often necessary to change the active verb into the passive, in order to obtain the true subject of that principal proposition, as in this very example. For it is clear that, reasoning thus, my principal intention in the major is to affirm something, from which I may conclude that we ought to honour Louis XIV.; and thus what I say of the Divine command is, properly, only an incidental proposition, confirming this affirmation, *Kings ought to be honoured —Reges sunt honorandi*; whence it follows that *kings* is the subject of the major, and Louis XIV. the subject of the conclusion, although, at first sight, each appears to be only a part of the attribute.

The following, also, are propositions very common in our language:—*It is foolish to listen to flatterers—It is hail*

which falls—It is a God who has redeemed us. Now the sense proves to us, that in order to arrange them in their natural order, placing the subject before the attribute, we must express them thus:—*To listen to flatterers is folly—That which falls is hail—He who has redeemed us is God.* And this is almost universal in all propositions which commence with *it is*, where there is afterwards found a *which* or *that*, that they have their attribute at the commencement, and their subject at the end. It is sufficient to have adverted to this now; and all these examples are but to show that we ought to judge by the sense, and not by the order of the words. This advice is very necessary, that we be not deceived by considering syllogisms as vicious which are in reality very good ones; since, for want of discriminating the subject and the attribute, we think they are contrary to the rules when they are exactly conformed to them.

CHAPTER XII.

OF CONFUSED SUBJECTS WHICH ARE EQUIVALENT TO TWO SUBJECTS.

It is important, in order to understand better the nature of what is called subject in propositions, to add here a remark which has been made in more important works than this, but which, since it belongs to logic, may find a place here.

It is, that when two or more things which have some resemblance succeed each other in the same place, and, principally, when there does not appear any sensible difference between them, although men may distinguish them in speaking metaphysically, they nevertheless do not distinguish them in their ordinary speech; but, embracing them under a common idea, which does not exhibit the

difference, and denotes only what they have in common, they speak of them as if they were the same thing.

Thus, though we change the air every moment, nevertheless we consider the air which surrounds us as being always the same; and we say that, from being cold, it has become warm, as if it were the same, whereas often that air which we feel cold is not the same as that which we find warm.

This water, we also say, in speaking of a river, was turbid two days ago, and, behold, now it is clear as crystal; while it is impossible it could be the same water. *In idem flumen bis non descendimus*, says Seneca, *manet idem fluminis nomen, aqua transmissa est.*

We consider the bodies of animals, and speak of them, as being always the same, though we are assured, that at the end of a few years there remains no part of the matter which at first composed them; and not only do we speak of them as the same body, without reflecting what we say, but we do so also when we reflect expressly on the subject. For common language allows us to say, The body of this animal was composed ten years ago of certain parts of matter, and now it is composed of parts altogether different. There appears to be some contradiction in speaking thus; for if the parts were altogether different, then is it not the same body. It is true; but we speak of it, nevertheless, as of the same body. And what renders these propositions true is, that the same term is taken for different subjects in this different application.

Augustus said that he had found the city of Rome of brick, and had left it of marble, in the same way we say of a town, of a mansion, of a church, that it was destroyed at such a time, and rebuilt at such another time. What, then, is this *Rome*, which was at one time of brick, and at another time of marble? What are these towns, these mansions, and churches, which are destroyed at one time, and rebuilt at another? Is the *Rome* of brick the same as the *Rome* of marble? No; but the mind, nevertheless, forms to itself a certain confused idea of *Rome*, to which it attributes these two qualities—being of brick at one time, and of marble at another. And when it afterwards forms propositions about it, and when it says, for example, that

Rome, which was brick before the time of Augustus, was marble when he died,—the word Rome, which appears to be only one subject, denotes, nevertheless, two, which are really distinct, but united under the confused idea of Rome, which prevents the mind from perceiving the distinction of these subjects.

It is by this means that the author of the book from which we borrowed this remark has cleared up the affected perplexity which the ministers delight to find in that proposition—*this is my body*—which no one would ever find, following the light of common sense. For, as we should never think of saying it was a proposition very perplexed, and very difficult to be understood, if we said of a church which had been burned and rebuilt—this church was burned ten years ago, and has been rebuilt in a twelvemonth—in the same way, we could not reasonably say there was any difficulty in understanding this proposition, —*that which is bread at this moment is my body at this other moment.* It is true that it is not the same *this* in these different moments, as the burned church and the rebuilt church are not really the same church; but the mind conceiving the bread and the body of Jesus Christ under the common idea of a present object, which it expresses by *this*, attributes to that object, which is really twofold, and only unity of confusion, the being bread at one moment, and the body of Jesus Christ at another, just as, having formed of that church burned and rebuilt, the common idea of a church, it gives to that confused idea two attributes, which cannot belong to the same subject.

Hence it follows that, taken in the sense of the Catholics, there is no difficulty in the proposition, *this is my body*, since it is only an abridgment of this other proposition, which is perfectly clear,—*that which is bread at this moment is my body at this other moment*—and since the mind supplies all that is not expressed. As we have remarked at the end of the First Part, when we used the demonstrative pronoun *hoc* to denote something which is presented to our senses, the precise idea formed by the pronoun remaining confused, the mind adds thereto the clear and distinct ideas obtained from the senses, in the form of an incidental proposition. Thus, when Jesus Christ pronounced the word

this, the minds of the apostles added to it, *which is bread*, and as they conceived that it was bread at that moment, they made, also, the addition of time, and thus the word *this* formed also this idea,—*this which is bread at this moment.* In the same way, when Christ said *that it was his body*, they conceived that *this was his body at that moment.* Thus the expression, *this is my body*, formed in them that total proposition, *this which is bread at this moment is my body at this other moment;* and this expression being clear, the abridgment of the proposition, which diminishes nothing of the idea, is so also.

And as to the difficulty proposed by the ministers, that the same thing cannot be bread and the body of Jesus Christ, since it belongs equally to the extended proposition—*this which is bread at this moment is my body at this other moment*—and the abridged proposition—*this is my body*—it is clear that it is no better than a frivolous wrangling, which might be alleged equally against these propositions: this church was burned at such a time, and rebuilt at such another time; and that they must all be disintricated through this way of conceiving many separate subjects under a single idea, which occasions the same term to be sometimes taken for one term and sometimes for another, without any notice being taken by the mind of this transition from one subject to another.

After all, we do not here profess to decide the important question touching the way in which we ought to understand these words, whether in a figurative or in a literal sense; for it is not enough to show that a proposition may be taken in a certain sense, but it ought to be proved that it must be so taken. But as there are some ministers who, on the principles of a false logic, obstinately maintain that the words of Jesus Christ cannot bear a catholic sense, it is not out of place to show here, briefly, that the catholic sense has in it nothing but what is clear, reasonable, and conformed to the common language of all mankind.

CHAPTER XIII.

OTHER OBSERVATIONS FOR THE PURPOSE OF FINDING OUT WHETHER PROPOSITIONS ARE UNIVERSAL OR PARTICULAR.

We may make some observations of the like kind, and equally important, touching the universality and particularity of propositions.

1st Observation.—We must distinguish between *two kinds of universality*, the one, which may be called *metaphysical*, the other *moral*.

We call universality, *metaphysical*, when it is perfect without exception, as, *every man is living*, which admits of no exception.

And universality, *moral*, when it admits of some exception, since in moral things it is sufficient that things are generally such, *ut plurimum*, as, that which St Paul quotes and approves of:

Cretenses semper mendaces, malæ bestiæ, ventres pigri.

Or, what the same apostle says: *Omnes quæ sua sunt quærunt, non quæ Jesu-Christi;*

Or, as Horace says:

Omnibus hoc vitium est cantoribus, inter amicos
Ut nunquam inducant animum cantare rogati;
Injussi nunquam desistant;

Or, the common aphorisms:

That all women love to talk.
That all young people are inconstant.
That all old people praise past times.

It is enough, in all such propositions, that the thing be commonly so, and we ought not to conclude anything strictly from them.

For, as these propositions are not so general as to admit of no exceptions, the conclusion may be false, as it could not be inferred of each Cretan in particular, that he was a liar and an evil beast, although the apostle approves

generally of this verse of one of their poets—*The Cretans are always liars, evil beasts, great gluttons*—because there might be some persons who had not the vices which were common to the others.

Thus the moderation which ought to be observed in these propositions, which are only morally universal, is, on the one hand, to draw particular conclusions only with great judgment, and, on the other, not to contradict them, or reject them as false, although instances may be adduced in which they do not hold, but, to satisfy ourselves, if we hear them carried too far, with showing that they ought not to be taken so strictly.

2d OBSERVATION.—There are some propositions which ought to be considered as *metaphysical universals*, though they may admit of exceptions, when in common custom it is not necessary for these extraordinary exceptions to be comprised in universal terms: as, if I say—*all men have two arms*—this proposition ought to be considered as true, in ordinary use. And it would be only wrangling to maintain that there had been monsters, who, although they had four arms, were nevertheless considered men; because it is sufficiently clear, in these general propositions, we do not speak of monsters, but we mean to say that, in the order of nature, men have but two arms.

We may say, also, in the same way, that all men employ sounds for the purpose of expressing their thoughts, but that all men do not employ writing; and it would not be a reasonable objection to this, that mutes may be found to falsify this proposition, since it is clear enough, without being expressed, that this ought to be understood only of those who have no natural impediment to the use of sounds, either because they cannot learn them, as is the case with those who are born deaf, or because they cannot form them, as is the case with the dumb.

3d OBSERVATION.—There are some propositions which are universal, only because they ought to be understood *de generibus singulorum*, and not *de singulis generum*, as the philosophers say; *i. e.*, of all the species of each genus, and not of all the particulars of these species. Thus we say that all animals were saved in Noah's ark, because

some of every species were saved in it. Jesus Christ also said of the Pharisees, that they paid the tenth of all herbs, *decimatis omne olus*,—not that they paid a tenth of all the herbs in the world, but because there were no kinds of herbs whereof they did not pay a tenth. Thus, too, St Paul says, *Sicut et ego omnibus per omnia placeo*,—that is to say, that he accommodated himself to all sorts of persons—Jews, Gentiles, Christians,—although he did not seek to please his persecutors, who were so numerous. Thus we say, also, that *a man has passed through all offices*, that is, through every kind of office.

4th OBSERVATION.—There are some propositions which are universal only because *the subject is to be taken as restricted by a part of the attribute.* I say, by a part; for it would be ridiculous for it to be restrained by the whole attribute, as if it were maintained, for instance, that this proposition were true, *All men are just*, because it was to be understood in this sense—that all just men are just, which would be frivolous. But when the attribute is complex, and has two parts, as in this proposition, *All men are just, through the grace of Jesus Christ;* and it may be maintained, with reason, that the term *just* is understood in the subject, though it be not expressed, since it is sufficiently clear that it is intended to say only, that all men who are just, are so through the grace of Jesus Christ alone. And thus, this proposition is rigorously true, though it might appear false, if we consider only what is expressed in the subject,—there being so many men who are wicked, or evil-doers, and who, consequently, have not been justified through the grace of Jesus Christ. There are a very great number of propositions in Scripture which ought to be taken in this sense, and, among others, that one in which St Paul says, *As in Adam all die, so also in Christ all are made alive.* For it is certain that a multitude of heathens, who have died in their infidelity, have not been made alive in Jesus Christ,—that they have no part in that glorious life of which St Paul here speaks. Thus the meaning of the apostle is, that as all those who die, die through Adam, so all those who are made alive, are made alive through Jesus Christ.

There are also many propositions which are morally universal in this way only, as when we say, *The French are good soldiers,—The Dutch are good sailors,—The Flemish are good painters,—The Italians are good comedians;* we mean to say that the French who are soldiers, are commonly good soldiers, and so of the rest.

5th OBSERVATION.—We are not to suppose that there is no other mark of particularity than the words *quidam, aliquis—some*, and the like. For, on the contrary, it very seldom happens that we use them, especially in our language (French).

When the particle *des* or *de* is the plural of the article *un*, according to the new remark of the General Grammar, it causes the nouns to be taken particularly, whereas they are commonly taken generally, with the article *les*. Hence there is a great deal of difference between these two propositions, *Les medecins croient maintenant qu'il est bon de boire pendant le chaud de la fièvre,—Physicians believe now that it is well to drink during the heat of the fever;* and, *Des medecins croient maintenant que le sang ne se fait point dans le foie,—Some physicians believe now that the blood is not made in the liver.* For *les medecins*, in the first, denotes the mass of physicians at the present day; and *des medecins*, in the second, denotes only some particular physicians.

But after or before *de*, or *des*, or *un*, in the singular, we place *il y a* (*there is*, or *are*), as, *il y a des medecins;* and this in two ways:

The *first* is, by simply placing after *des* or *un* the substantive to be the subject to the proposition, whether it be the first or the last: as, *Il y a des douleurs salutaires; il y a des plaisirs funestes; il y a de faux amis; il y a une humilité généreuse; il y a des vices couverts de l'apparence de la vertu.* In this way we express in our (French) language, that which is expressed by *quelques* in the style of the school: *Quelques douleurs sont salutaires; quelque humilité est généreuse;* and thus in the others.

The *second* way is that of joining the adjective to the substantive by a *qui* (who, or which): *Il y a des craintes qui sont raisonnables*—(There are some fears which are reasonable). But this *qui* does not prevent these proposi-

tions from being simple in sense, though complex in expression; for it is as if we said simply, *Quelques craintes sont raisonnables.* These following forms of speech are still more common than the preceding:—*Il y a des hommes qui n'aiment q'eux mêmes; il y a des Chretiens qui sont indignes de nom*—(There are men who love themselves alone; there are Christians who are unworthy of the name).

We have the same expression sometimes used in Latin:

Sunt quibus in satyrâ videor nimis acer, et ultra
Legem tendere opus;

Which is the same thing as if it were said,

Quidam existimant me nimis acrem esse in satyrâ,—
There are some who think me too pointed in satire.

So also in the Scripture, *Est qui nequiter se humiliat,*—There are some who humble themselves wickedly.

Omnis, all, with a negation, makes a particular proposition, with this difference, that in Latin the negation precedes *omnis,* and in French it follows *all* (tout): *Non omnis qui dicit mihi Domine, Domine, intrabit in regnum cœlorum,*—Not all who say unto me, Lord, Lord, shall enter into the kingdom of heaven; *Non omne peccatum est crimen,*—Every sin is not a crime.

Nevertheless, in Hebrew, *non omnis* is often put for *nullus,* as in the psalm, *Non justificabitur in conspectu tuo omnis vivens,*—No man living shall be justified before God. This happens, because, in this case, the negation falls on the verb, and not on *omnis.*

6th OBSERVATION.—The foregoing observations are very useful when there is a term of universality, as *all, none,* &c.; but when there is no such term, and none of particularity either, as when I say, *Man is rational, man is just,* it is a celebrated question among philosophers, whether these propositions, which they call *indefinite,* ought to be called *universal* or *particular.* This question must be understood of those which have no context, and which are not determined by what follows, to either of these senses; for it cannot be doubted that we ought to determine the sense of a proposition, where it has any ambiguity, by what accompanies it in the discourse of which it forms a part.

Considering it in itself, then, philosophers say that it

ought to be considered *universal* in *necessary matter*, and *particular* in *contingent matter*.

I find this maxim approved of by very able men. It is, nevertheless, very false; and it may be said, on the contrary, that *when we attribute any quality to a common term, the indefinite proposition ought to be considered universal, whatever its matter may be.* And thus, in contingent matters, it ought not to be considered as a particular proposition, but as a universal, which is false. And this is the natural judgment which all men form of such propositions, rejecting them as false when they are not true generally, at least when they have not moral generality, with which men rest satisfied in their common discourses about things in the world.

For who would allow it to be said, that *bears are white;* that *men are black;* that *the Parisians are gentlemen;* that *Poles are Socinians;* that *Englishmen are Quakers?* and yet, according to the distinction of these philosophers, these propositions ought to be considered quite true, since, being indefinite in contingent matter, they ought to be reckoned particular. Now it is very true that there are some bears white, as those of Nova Zembla; some men black, as the Ethiopians; some Parisians gentlemen; some Poles Socinians; some Englishmen Quakers. It is, therefore, clear, that in any matter whatever, indefinite propositions of this kind are taken universally; but in a contingent matter we are satisfied with moral universality. Whence we may very well say, *The French are brave; the Italians suspicious; the Germans heavy; the Orientals voluptuous;* although this may not be true of every individual, because we are satisfied that it is true of the majority.

There is, then, another distinction on this subject, which is much more reasonable, which is, that these indefinite propositions are universal in matters of doctrine: as, *angels have no body*—and they are only particular in matters of fact and of history, as when it is said in the Gospel—*Milites plectentes coronam de spinis, imposuerunt capiti ejus.* It is very clear that this ought to be understood only of some soldiers, and not of all soldiers; the reason of which is, that in the case of particular actions, especially when they are determined to a given time, they generally agree to

belong to a common term, only because of some particulars, a distinct idea of which is in the mind of those who make these propositions, so that, considering them aright, these propositions are rather singular than particular, as we may judge from what has been said of terms complex in sense.—(1st Part, Cap. 8; 2d Part, Cap. 6.)

7th OBSERVATION.—The names of *body*, of *community*, *people*, when taken collectively, as they commonly are, for the whole body, the whole community, the whole people, do not, properly, make the propositions into which they enter universal, still less particular, but rather singular, as when I say—*the Romans conquered the Carthaginians—the Venetians carry on war against the Turks—the judges of such a place have condemned a criminal.* These propositions are not universal, otherwise we might conclude of every Roman that he had conquered the Carthaginians, which would be false; neither are they particular, for this means more than if I were to say—some Romans conquered the Carthaginians;—but they are singular, inasmuch as we consider every nation as a moral person, whose existence is for several centuries,—who remains as long as he composes a state, and who acts through all these ages by those who compose it, as a man acts by his members. Whence it happens that we may say that the Romans, who were conquered by the Gauls who took Rome, conquered the Gauls in the time of Cæsar, attributing thus to the same term, Romans, being conquered at one time, and victorious at another, though, at one of these times, there was not a single man who was also at the other. And this shows the foundation of the vanity which each individual has on account of the noble actions of his nation, in which he had no part, and which is as senseless as it would be for an ear which was deaf, to glory in the quickness of the eye, or in the skill of the hand.

CHAPTER XIV.

OF PROPOSITIONS IN WHICH THE NAME OF THINGS IS GIVEN TO SIGNS.

We have said, in the First Part, that of ideas some have *things* for their objects, others *signs*. Now, since these ideas of signs attached to words enter into the composition of propositions, a circumstance happens which it is important to examine in this place, and which properly belongs to logic—it is, that we sometimes affirm of them the thing signified. And it is important to know when it is right to do this, principally in relation to the *signs of institution;* for, in relation *to natural signs*, there is no difficulty, since the visible connection there is between such signs and things, indicates clearly that when we affirm of the sign the thing signified, we mean not that sign is really this thing, but that it is so in intent, and figuratively. And thus we might say, without any introduction, and without ceremony, of a portrait of Cæsar, *this is Cæsar*, and of a map of Italy, *this is Italy.*

It is only necessary, therefore, that we examine the rule which allows us to affirm of things signified their signs, in relation to *instituted signs*, which do not make known, by any visible relation, the sense in which these propositions are to be understood; and this has given rise to many disputes.

For it appears to some that this may be done indifferently, and that it is sufficient, in order to prove that a proposition is reasonable, when taken in a figurative sense, and in the sense of sign, to say that it is common to give to the sign the name of the thing signified. And yet this is not true, for there are a multitude of propositions which would be extravagant, if we were to give to signs the name of the thing signified, which is never done, because they are extravagant. Thus a man who has settled it in his mind that certain things should signify others, would be

ridiculous, if, without having previously explained it to any one, he should take the liberty of giving to these fanciful signs the names of things, and should say, for instance, that *a stone was a horse*, and an *ass was the king of Persia*, because he had established these signs in his mind. Thus the first rule that ought to be followed on this subject, is, *that we are not allowed to give indifferently the names of things to signs.*

The second, which is a consequence of the first, is, that the simple manifest incompatibility of the terms is not a sufficient reason to lead the mind to the figurative sense, and to conclude that, since the proposition cannot be taken literally, it must, therefore, be explained in a figurative sense; otherwise there would be none of these extravagant propositions; and the more impossible they were in their literal sense, the more easily should we fall into their figurative sense, which, nevertheless, must not be; for who would allow, and without any previous explanation, but solely and virtually of a secret determination, that one should say that *the sea is heaven*, that *the earth is the moon*, that *a tree is a king*. Who does not see that it would be the shortest way to acquire the reputation of folly to pretend to introduce this language into the world? It is necessary, therefore, that he to whom we speak be prepared, in a certain way, before we have a right to employ such propositions; and it must be remarked, that of these explanations there are some which are certainly insufficient, and others which are certainly sufficient.

1st, Distant relations, which do not present themselves to the senses, nor, at first sight, to the mind, and which are only discovered by meditation, are by no means sufficient to give at once to signs the names of things signified, for there are scarcely any things between which we may not find such relations; and it is clear, that relations which are not seen at once, are not sufficient to lead us to the figurative sense.

2d, It is not sufficient to give to a sign the name of the thing signified, in the first establishment which is made of it, to know that those to whom we speak have hitherto considered it as a sign of another thing altogether different. We know, for example, that the laurel was the sign of

victory, and the olive of peace; but this knowledge by no means prepares the mind to find what is meant, if we, who chose to make the laurel the sign of the king of China, and the olive that of the Grand Seigneur, should say without ceremony, in walking in a garden, do you see that laurel? it is the king of China; and that olive? it is the Grand Turk.

3d, Any previous explanation, which only prepares the mind to expect some great thing, without preparing it to consider, in particular, the thing as a sign, does not at all afford sufficient ground for attributing to this sign the name of the thing signified at its first institution. The reason of this is clear, since there is no direct and natural connection between the idea of greatness and the idea of a sign, and thus the one does not at all lead to the other.

But it is certainly a sufficient ground for giving to signs the names of things, when we see in the minds of those to whom we speak, that, considering certain things as signs, they are in difficulty only as to what they signify.

Thus Joseph might reply to Pharaoh, that the seven fat kine and the seven full sheaves which he had seen in his dream were seven years of plenty, and the seven lean kine and the seven thin sheaves were seven years of famine, since he saw that Pharaoh was in trouble only on this point, and that he inwardly asked himself this question—What do these seven fat and lean kine, these seven full and empty sheaves, represent?

Thus Daniel answered very appropriately to Nebuchadnezzar—that he was the head of gold, because he had proposed to him a dream which he had of a statue with a golden head, and required from him its interpretation.

Thus, when we utter a parable, and proceed to explain it (those to whom it was spoken, considering already all that composed it as signs), we have a right, in the explanation of every part, to give to the sign the name of the thing signified.

Thus God having shown to the prophet Ezekiel in a vision, *in spiritu*, a field full of dead men; and the prophet distinguishing visions from realities, and being accustomed to consider them as signs, God spoke very intelligibly when he told him that *these bones were the house of Israel*, that is to say, they represented the house of Israel.

These are certain and sufficient preparations; and as we see no other examples in which it is agreed that there should be given to the sign the name of the thing signified, we derive this maxim from common sense,—*that we may give to signs the name of things only, when we have grounds for supposing that they are already considered as signs, and when we see that the minds of others are in doubt, not about what they are, but about what they represent.* But as the greater part of moral rules have exceptions, it may be doubted whether we ought not to make one here in favour of a single case, viz., when the thing signified is such, that it requires in some sort to be denoted by a sign, so that, as soon as the name of that thing is pronounced, the mind conceives immediately that the subject to which it is united is intended to designate it.

Thus, as covenants are commonly denoted by outward signs, if we affirm the word *covenant*, or any outward thing, the mind will be immediately led to conceive that it is affirmed of it as of its sign; so that, when we find in Scripture that *circumcision is the covenant*, it may be that there is nothing to surprise where covenant fixes the idea of sign on that to which it is united. And thus, as he who hears a proposition conceives the attribute, and qualities of the attribute, before he unites it with the subject, we may suppose that he who hears this proposition, that *circumcision is the covenant*, is sufficiently prepared to conceive that circumcision is only figuratively the covenant, the word *covenant* having led him to form this idea, not before it was pronounced, but before it was joined in his mind with the word *circumcision*.

I have said, that it might be thought that the things which require, by a fitness of reasoning, to be denoted by signs, should form an exception to the established rule, which demands a preliminary preparation, through which we might be led to regard the sign as a sign, in order that we might affirm of it the thing signified, because the contrary might also be believed. For, 1st, this proposition, *circumcision is the covenant*, is not in the Scripture, which runs simply thus, *Behold the covenant which you shall observe between you, your posterity, and me, Every male among you shall be circumcised.* Now it is not said in these words that circum-

cision is the covenant, but circumcision is in them commanded as a condition of the covenant. It is true that God required that condition in order that circumcision might be a sign of the covenant, as it is said in the following verse, *ut sit in signum fœderis;* but, in order that it might be a sign, it was necessary that its observance be commanded, and made a condition of the covenant, which is contained in the preceding verse.

2d, These words in St Luke, *This cup is the new covenant of my blood,* which, it is alleged, have still less evidence for confirming this exception, for, when translated literally, these are St Luke's words, *This cup is the new testament in my blood.* Now, as the word *testament* signifies not only the last will of the testator, but still more appropriately the *instrument* which represents it, there is nothing figurative in calling the cup—the blood of Jesus Christ—the *testament,* since it is peculiarly the mark, the pledge and sign, of the last will of Jesus Christ,—the *instrument* of the new covenant.

But, be that as it may, this exception being, on the one hand, doubtful, and on the other, very rare, and there being few things which require of themselves to be denoted by signs, these do not hinder the use and application of the rule in relation to all other things which have not this quality, and which men are accustomed to represent by instituted signs. For this principle of equity must be remembered, that the majority of rules having exceptions, remain, nevertheless, in all their force in the things which are not comprised in these exceptions.

It is by these principles that we must decide this important question, whether we are to give to these words, *This is my body,* a figurative sense; or, rather, it is by these principles that all the world has decided,—all the nations of the earth having been naturally led to take them in a literal sense, and to exclude the figurative. For the apostles, not regarding the bread as a sign, and being in no difficulty about what it signified, Jesus Christ could not have given to the signs the names of things without speaking contrary to the custom of all men, and without deceiving them. They might, perhaps, regard what was done as something great, but that is not sufficient.

We have nothing more to remark on the subject of those signs to which the names of things are given, except that it is extremely necessary to distinguish between the expressions in which we use the name of a thing to denote the sign, as when we call a picture of Alexander by the name of Alexander; and those in which the sign being denoted by its own name, or by a pronoun, we affirm of it the thing signified. For this rule—that it is necessary that the minds of those to whom we speak already consider the sign as a sign, and are in doubt as to what it signifies—applies by no means to the first kind of expressions, but solely to the second, in which we affirm expressly of the sign the thing signified. For we employ these expressions only to teach those to whom we speak what the sign signifies; and we do this only when they are sufficiently prepared to conceive that the sign is the thing signified, only figuratively, and by representation.

CHAPTER XV.

OF TWO KINDS OF PROPOSITIONS WHICH ARE OF GREAT USE IN THE SCIENCES—DIVISION AND DEFINITION.—AND FIRSTLY OF DIVISION.

It is necessary to say something in detail of two propositions which are of great use in the sciences—*division* and *definition*.

Division is the separation of a whole into its parts.

But as there are *two kinds of wholes*, there are also two kinds of division. There is a *whole composed of parts really distinct*, called, in Latin, *totum*, and whose parts are called *integral parts*. The division of this whole is called properly *partition*: as when we divide a *house* into its *apartments*, a *town* into its *wards*, a *kingdom* or *state*, into its *provinces*,

man into *body* and *soul*, *the body* into its *members*. The sole rule of this division is, to make the enumeration of particulars very exact, and that there be nothing wanting to them.

The other *whole* is called, in Latin, *omne*, and its parts, *subjected* or *inferior parts*, inasmuch as the whole is a *common term*, and its parts are the terms comprising its extension. The word *animal* is a whole of this nature, of which the inferiors—as man and beast—which are comprehended under its extension, are subjected parts. This division obtains properly the name of *division*, and there *are four kinds of division* which may be noticed.

The *first* is, when we divide the *genus by its species: every substance is body or mind; every animal is man or beast.* The *second* is, when we divide the *genus* by its *differences: every animal is rational or irrational; every number is even or uneven; every proposition is true or false; every line is straight or curved.*

The *third* is, when we divide a *common subject* into the *opposite accidents* of which it is susceptible, these being according to its different inferiors, or in relation to different times: as, *every star is luminous by itself, or by reflection only; every body is in motion or at rest; all the French are nobles or commoners; every man is well or ill; all nations employ, for the purpose of expressing themselves, either speech alone, or writing together with speech.*

The *fourth* is that of an *accident* into its *different subjects*, as division of *goods* into those of *mind* and *body*.

The rules of division are—1*st*, *That it be complete*, that is to say, that the members of the division comprehend the whole extent of the terms into which it is divided: as, *even* and *uneven* comprehend the whole extent of the term *number*, there being no number which is not either even or uneven. There is scarcely anything which leads us to make so many false reasonings as want of attention to this rule. What deceives us here is, that there are often terms which appear so opposed that they seem to allow no medium, but which, nevertheless, have one. Thus, between *ignorant* and *learned*, there is a certain medium of knowledge which removes a man from the rank of the ignorant, but which, still, does not place him in the rank of the learned;

between *vicious* and *virtuous* there is a certain state of which we may say, what Tacitus said of Galba, *magis extra vitia quam cum virtutibus*—for there are some people who, having no gross vices, are not called vicious, and who, doing no good, cannot be called virtuous, although, before God, not being virtuous, may be a great vice; between *sick* and *well* there is the state of the man indisposed, or convalescent; between *day* and *night* there is *twilight;* between *opposite vices* there is a *mean of virtue*, as *piety* between *impiety* and *superstition;* and sometimes this mean is *twofold*, as between *avarice* and *prodigality* there is *liberality* and a *laudable frugality;* between the *timidity* which fears everything, and the *rashness* which fears nothing, there is the *bravery* which is not frightened at dangers, and the *reasonable prudence* which leads us to avoid those which it is not fitting we should be exposed to.

The *second rule*, which is a consequence of the first, is that the *members of the division be opposed:* as, *even*, *uneven*, *rational*, *irrational*. But what we have already said in the First Part, must be here noticed, viz., that it is not necessary for the differences, which constitute its opposed members, to be *positive*, but it is sufficient for one to be so, and for the other to be the genus alone with the negation of another difference. It is, indeed, in this very way that we make the members more certainly opposed. Thus, the difference between a beast and a man, is only the absence of reason, which is nothing positive; the unevenness of a number is only the negation of its divisibility into two equal parts. The first number has nothing which the compound number has not, unity being the measure of each, and that number which is called first, differs from the compound one only in this, that it has no other measure save unity.

Nevertheless, it must be confessed that it is better to express the opposed differences by *positive terms*, when this can be done, inasmuch as this explains better the nature of the members of the division. This is why the division of *substance* into that *which thinks*, and that *which is extended*, is much better than the common one, into that which is *material*, and that which is *immaterial*, or equally into that which is *corporeal*, and that which is *not corpo-*

real, inasmuch as the words *immaterial*, or *incorporeal*, furnish us with an idea, only very imperfect and confused, of that which is understood much better by the expression, *substance that thinks*.

The *third rule*, which is a consequent of the second, is *that one of the members be not so contained in the other, that the other may be affirmed of it*, although it may sometimes be contained in it after another manner, for *line* is included in *superficies*, as a term of superficies, and *superficies* in *solid*, as a term of solid. But this does not prevent *extension* from being divided into *line*, *superficies*, and *solid*, because we cannot say that line is superficies, or that superficies is solid. We cannot, on the other hand, divide number into equal, unequal, and square, since every square number being even or uneven, it is already contained in the first two numbers. Neither ought we to divide opinions into true, false, and probable, since every probable opinion is true or false; but we may first divide them into true and false, and then divide each into certain and improbable.

Ramus and his followers have laboured very hard to show that no divisions ought to have more than *two members*. When this may be done conveniently, it is better; but clearness and ease being that which ought first to be considered in the sciences, we ought not to reject divisions into three members, and especially when they are more natural, and when it would require forced subdivisions in order to reduce them to two members; for thus, instead of relieving the mind, which is the principal effect of division, we should load it with a great number of subdivisions, which it is much more difficult to retain than if we had made at once more members in that which we divide. For example, is it not more short, simple, and natural, to say, *All extension is either line, or superficies, or solid*, than to say with Ramus, *Magnitudo est linea, vel lineatum, lineatum et superficies, vel solidum?*

Finally, we may remark that it is an equal defect not to make enough, and to make too many divisions; the one does not sufficiently enlighten the mind, the other dissipates it too much. Crassotus, who is a philosopher of worth among the interpreters of Aristotle, has injured his

book by too great a number of divisions. We fall thus into the confusion which we seek to avoid. *Confusum est quidquid in pulverem sectum est.*

CHAPTER XVI.

OF THE DEFINITION WHICH IS TERMED THE DEFINITION OF THINGS.

We have spoken at considerable length, in the First Part, of the *definition of names*, and we have shown that we must not confound it with the *definition of things*, since the definitions of names are arbitrary, whereas the definitions of things do not depend on us, but on what is involved in the true idea of the thing, and are not to be taken as principles, but considered as propositions, which need after to be established by reason, and which may be disputed. It is, then, of this last kind of definition alone, that we speak here.

Of this there are *two kinds*,—the one more exact, which retains the name of *definition;* the other less so, which is termed *description.*

The *more exact*, is that which *explains the nature of a thing by its essential attributes*, of which those which are common are called *genus*, and those which are special, *difference.* Thus we define *man*, a *rational animal; mind*, a *substance which thinks; body*, a *substance extended; God*, a *perfect being.* It is necessary, too, as far as possible, that that which is placed as *genus* in the definition, be the *proximate genus* of the thing defined, and not simply the remote.

Sometimes, also, we define by *integral parts*, as when we say, that *man* is a *thing compounded of mind and body.* But even then there is something which holds the place of genus—the *term* thing compounded, and the rest takes the place of difference.

The *definition less exact*, which is termed *description*, is that which *gives some knowledge of a thing by the accidents which are peculiar to it*, and which determine it sufficiently to enable us to discriminate it from others. It is in this way that we describe *herbs*, *fruits*, *animals*, by their *figure*, *size*, *colour*, and other such accidents. The descriptions of poets and orators are of this nature. There are also some definitions or descriptions of things by their *causes*, *matter*, *form*, *end*, &c.; as if we define a clock, an iron machine, composed of different wheels, whose regular movement is intended to mark the hours.

There are *three things* necessary to a good definition,—that *it be universal*, that *it be appropriate*, and that *it be clear*.

1st, It is necessary that a definition *be universal*, that is to say, that it *comprehend the whole thing defined*. Hence the common definition of *time*, *that it is the measure of motion*, is probably bad, since it is very likely that time measures rest as well as motion. For we say that a thing has been so long at rest, as well as that it has been moving for so long a time; so that it is clear that time is nothing more than the continuance of a creature in some state, whatever that state may be.

2d, It is necessary that a definition be *special*, that is to say, that it *belong exclusively to the thing defined*. Hence the common definition of the elements, as *simple corruptible bodies*, seems bad; for the celestial bodies, being not less simple than the elements, by the confession of these philosophers themselves, we have no reason to suppose that the heavens are subject to alterations like those which take place on earth, without speaking of comets, which we now know are not formed from the exhalations of the earth, as Aristotle imagined. There have been discovered spots on the sun, which have formed and dispersed there in the same way as our clouds, although they are of much greater magnitude.

3d, A definition must *be clear*, that is to say, it must serve to give us a clearer and more distinct idea of the thing which we define, and that it enable us, as far as possible, to comprehend its nature, so that it may help us to give an account of its principal properties, which is what

ought principally to be considered in definitions, and what is neglected in a great number of Aristotle's definitions. For who is there that ever comprehended the nature of motion better through this definition: *Actus entis in potentia quatenus in potentia*,—the act of a being in power as far as it is in power? Is not the idea which nature gives us of it a hundred times more clear than this? and who is there that has ever learned from it any of the properties of motion?

The four celebrated definitions of these first four qualities, the *dry*, the *moist*, the *hot*, and *cold*, are no better. The *dry*, says he, is that which is easily retained within its own limits, and with difficulty in those of another body,—*Quod suo termino facile continetur, difficulter alieno.*

And *the moist*, on the contrary, is that which is easily retained in the boundaries of another body, and with difficulty in its own,—*Quod suo termino difficulter continetur, facile alieno.*

But, in the first place, these two definitions belong more to hard and liquid bodies, than to dry and humid bodies; for we say that one air is dry, and that another air is humid, though it may be always retained within the bounds of another body, because it is always fluid. And further, we do not see how Aristotle could say that fire, that is, flame, is dry, according to this definition, since it easily accommodates itself to the limits of another body; whence, also, Virgil calls fire liquid, *et liquidi simul ignis;* and it is vain subtilety to say, with Campanella, that fire, when confined, *aut rumpit aut rumpitur;* for this is not because of its pretended dryness, but because its own smoke stifles it if it has no air. Hence it is easily confined within the limits of another body, provided there be any opening through which it may discharge that which it constantly exhales.

Hot, he defines, that *which collects like bodies, and separates unlike*,—*Quod congregat homogenea, et disgregat heterogenea.*

And *cold, that which collects unlike bodies, and separates like*,—*Quod congregat heterogenea, et disgregat homogenea.* This sometimes belongs to cold and hot, but not always; but it does not at all enable us any better to understand the true cause which leads us to call one body hot, and

another cold. So that the chancellor Bacon had reason to say that these definitions were like to that which one might make of a man, in defining him to be *an animal that made shoes*, or *cultivated vines*. The same philosopher defines nature, *Principium motûs et quietis in eo in quo est*,—*The principle of motion and of rest in that in which it is*; which is founded on a fancy that he had, that natural bodies differed from artificial bodies in this, that natural bodies had within them the principle of their movement, and that artificial bodies had it only from without; whereas it is clear and certain that no body can impart motion to itself, because matter, being of itself indifferent to motion or rest, cannot be determined to one or the other except by a foreign cause. And since we cannot go on to infinity, it must necessarily be God who has impressed motion on matter, and who preserves it in it still.

The celebrated definition of the *soul* appears still more defective: *Actus primus corporis naturalis organici, potentia vitam habentis*,—*The first act of a natural, organised body having life in potentia*. We do not know what he intends to define. For, 1st, if it is the soul, so far as it is common to men and beasts, he is defining a chimera, there being nothing common to these two things. 2d, He is explaining an obscure term by four or five more obscure. And to refer only to the word life, the idea which we have of life is not less obscure than that which we have of the soul, these two terms being equally ambiguous and equivocal.

These are some of the rules of division and definition. But although there is nothing more important in the sciences than to divide and define well, it is unnecessary to say more about it here, as it depends much more on a knowledge of the matter treated of than on the rules of logic.

CHAPTER XVII.

OF THE CONVERSION OF PROPOSITIONS, IN WHICH THE NATURE OF AFFIRMATION AND NEGATION, ON WHICH THIS CONVERSION DEPENDS, IS MORE THOROUGHLY EXPLAINED.—AND FIRST, TOUCHING THE NATURE OF AFFIRMATION.

[The following Chapters are somewhat difficult to comprehend, and are not necessary in practice. Hence those who do not wish to tire the mind with things of little practical use, may pass them over.]

We have refrained till now from speaking of the conversion of propositions, because the foundation of all argumentation, of which we are to speak in the following part, depends on it; and thus it is better that this matter should not be far removed from what we have to say of reasoning, although, to treat well of it, we must reproduce some part of what we have already said of affirmation and negation, and explain thoroughly the nature of both.

It is certain that we cannot express a proposition to others, except by employing *two ideas*, one for the *subject*, the other for the *attribute*, and another word which denotes the union which our mind conceives between them. That union cannot be better expressed than by the words themselves which we employ for affirming, when we say that one thing is another thing.

Hence it is clear that the *nature of affirmation is to unite and identify, if we may so speak, the subject with the attribute*, and this is what is signified by the word *is*.

And it follows, also, that it is the nature of the affirmation to place the attribute in all that is expressed in the subject, according to the extension which it has in the proposition: as, when I say, *all man is an animal*—I mean to say, and I express, that everything that is man is also animal; but if I say, simply, *some man is just*, I do not place *just* on all men, but only on some men.

But we must also, in like manner, remember here what we have already said, that in ideas it is necessary to distinguish the COMPREHENSION from the EXTENSION, and that the *comprehension* denotes the *attributes contained* IN *an idea* and the *extension* the *subjects* (or classes) *which contain that idea.* Hence it follows that *an idea is always affirmed according to its comprehension*, because, in taking away any one of its *essential attributes*, we *utterly destroy and annihilate it*, so that it is no longer the same idea; and consequently, when it is affirmed, it is always affirmed in relation *to everything which it comprehends within itself.* Thus when I say that *a rectangle is a parallelogram*, I affirm of *rectangle everything that is comprised in the idea of parallelogram.* For if there were any part of this idea that did not belong to a rectangle, it would follow that the whole idea did not belong to it, but only a part of that idea; and thus the word parallelogram, which signifies the whole idea, ought to be denied and not affirmed of the rectangle. We shall see that this is the principle of all affirmative arguments.

And it follows, on the contrary, that the *idea of the attribute* is not taken according to the *whole extension*, at least when its extension is not greater than that of the subject, for if I say *that all dissolute men will be damned*, I do not say that they alone will be damned, but that they will be among the number of the accursed.

Thus the affirmation, placing the idea of the attribute in the subject, is properly that which determines the extension of the attribute in the affirmative proposition, and the identity which it denotes, considers the attribute as restricted to an extension equal to that of the subject, and does not take in all its generality, if that be greater than the subject, for it is true that all lions are animals, that is to say, that every lion contains the idea of animal, but it is not true that they alone are animals.

I said that the attribute is not taken in all its generality, if it is greater than the subject, for being restrained only by the subject, if the subject is as general as the attribute, it is clear that the attribute remains in all its generality, since it will have as much as the subject, and we suppose that by its nature it can have no more.

Whence we may collect these four indubitable axioms:—

AXIOM 1.

The attribute is placed in the subject by the affirmative proposition, according to the whole extension which the subject has in the proposition; that is to say, if the subject is universal, the attribute is conceived in the whole extension of the subject, and if the subject is particular, the attribute is conceived only in a part of the extension of the subject. There are examples of this above.

AXIOM 2.

The attribute of an affirmative proposition is affirmed according to the whole proposition; that is to say, according to all its attributes. The proof of this is above.

AXIOM 3.

The attribute of an affirmative proposition is not affirmed according to its whole extension, if it is in itself greater than that of the subject. The proof of this has been already given.

AXIOM. 4.

The extension of the attribute is restricted by that of the subject, so that it denotes no more than that part of its extension which agrees with its subject: as, when we say that men are animals, the word animal signifies no longer all animals, but simply those animals which are men.

CHAPTER XVIII.

OF THE CONVERSION OF AFFIRMATIVE PROPOSITIONS.

We call the conversion of a proposition *the changing of the subject into the attribute, and of the attribute into the*

subject, without affecting the truth of the proposition, or rather, so that it necessarily follows from the conversion that it is true, supposing that it was so before.

Now, by what we have just said, it will be easily understood how this conversion must be effected, for as it is impossible that one thing can be joined to another, without that other thing being also joined to the first, and that it follows very clearly that if A is joined to B, B is joined to A, it is clearly impossible that two things can be conceived as identified, which is the most perfect of all unions, unless that union be reciprocal,—that is to say, that we be able mutually to affirm the two united terms, in the manner in which they are united, which is called conversion.

Thus, as in particular affirmative propositions, *e. g.*, when we say *some man is just*, the subject and the attribute are both particular—the subject, man, being particular by the mark of particularity which is added to it—and the attribute, *just*, being so also, inasmuch as its extension being restricted by that of the subject, signifies only the justice which is in *some man*, it is evident that if some man is identified with *some just*, *some just* is also identified with *some man*, and that thus we need only change the attribute into the subject, preserving the same particularity, in order to convert such propositions.

The same thing cannot be said of *universal affirmative propositions*, because in these propositions the subject alone is universal, that is to say, taken according to its whole extension. The attribute, on the contrary, being limited and restrained, and consequently, when we make it the subject by conversion, it must preserve the same restriction, and have added to it a mark which determines it, that it may not be taken generally. Thus, when I say that *man is an animal*, I unite the idea of *man* with that of *animal*, restraining and confining it to men alone. Therefore, when I wish to look at that union under another aspect, beginning with animal, and then affirming man, it is necessary to preserve to this term the same restriction, and in order that no mistake may be made, add to it some mark of determination.

So that, since universal affirmative propositions can only be converted into particular affirmatives, we ought not to

conclude that they are converted less properly than the others, whereas they are made up of a general subject and a restricted attribute, it is clear that when they are converted by changing the attribute into the subject, they ought to have a subject restricted and confined, that is to say, particular: whence we obtain these two rules.

Rule 1.

The universal affirmative propositions may be converted by adding a mark of particularity to the attribute when changed into the subject.

Rule 2.

Particular affirmative propositions are to be converted without any additional change, that is to say, by retaining for the attribute, when changed into the subject, the mark of particularity which belonged to the first subject. But it is easily perceived that these two rules may be reduced to one, which includes them both.

The attribute being restrained by the subject in all affirmative propositions, if we wish to change it to the subject, we must preserve that restriction and give it a mark of particularity, whether the first subject were universal or particular.

Nevertheless, it often happens that universal affirmative propositions may be converted into other universals. But this happens exclusively, when the attribute is not in itself of wider extension than the subject, as when we affirm the difference, or the property of the species, or the definition of the thing defined; for, then, the attribute not being restricted, may be taken as generally in conversion as the subject was—*all man is rational; all rational is man.*

But these conversions, being true only under particular circumstances, are not reckoned true conversions, which ought to be certain and infallible, by the simple transposition of the terms.

CHAPTER XIX.

OF THE NATURE OF NEGATIVE PROPOSITIONS.

THE nature of negative propositions cannot be expressed more clearly than by saying, that it is *the conceiving that one thing is not another;* but, in order that one thing be not another, it is not necessary that it should have nothing in common with it; it is enough that it has not all which the other has, as it is enough, in order that a beast be not a man, that it should not have all that a man has, and it is not necessary that it should have nothing of what is in man. Whence we may obtain this axiom:—

AXIOM 5.

The negative proposition does not separate from the subject all the parts contained in the comprehension of the attribute, but it separates only the total and complete idea composed of all these attributes united.

If I say that matter is not a substance that thinks, I should not, therefore, say that it is not a substance, but I say that it is not a thinking substance, which is the total and complete idea that I deny of matter.

It is quite the reverse with the *extension* of idea, for the negative proposition separates from the subject the idea of the attribute, according to the *whole of its extension;* and the reason of this is clear, for, to be the *subject of an idea*, and to be *contained in its extension*, is nothing else but to include that idea; and, consequently, when we say that one idea does not include another, which is termed denying, we say that it is not one of the subjects of that idea.

Thus, if I say that *man is not an insensible being*, I mean to say that he is not among the number of the insensible beings; and I, therefore, separate them all from him. Whence we may obtain this other axiom.

Axiom 6.

The attribute of a negative proposition is always taken generally; which may also be expressed more distinctly thus: *All the subjects of the one idea, which is denied of the other, are also denied of that other idea;* that is to say, that an idea is always denied according to its *whole extension.* If triangle is denied of square, all that is contained in triangle will be denied of square. This rule is commonly expressed in the schools in these terms, which mean the same thing: *If the genus is denied, the species also is denied;* for the species is subject to the genus. Man is a subject of animal, because he is contained in its extension.

Not only do negative propositions separate the attribute from the subject, according to the whole extension of the attribute, but they separate also this attribute from the subject according to the whole extension which the subject has in the proposition; that is to say, they separate it universally, if the subject is universal,—and particularly, if the subject is particular. If I say that *no vicious man is happy,* I separate all the happy persons from all the vicious persons; and if I say that *some doctor is not learned,* I separate learned from some doctor. And hence we may obtain this axiom:

Axiom 7.

Every attribute denied of a subject, is denied of everything that is contained in the extension which that subject has in the proposition.

CHAPTER XX.

OF THE CONVERSION OF NEGATIVE PROPOSITIONS.

Since it is impossible totally to separate two things, except the separation be mutual and reciprocal, it is clear that if

I say, *No man is a stone*, I can say also *that no stone is a man:* for if any stone were a man, that man would be a stone; and, consequently, it would not be true that no man was a stone. And thus,

RULE 3.

Negative universal propositions may be converted, by simply changing the attribute into the subject, and preserving to the attribute, when it has become the subject, the same universality which the first subject had; for the attribute, in negative universal propositions, is always taken universally, since it is denied according to the whole of its extension, as we have already shown above.

But for this very reason we cannot convert particular negative propositions;—we cannot say, for example, that *some physician is not a man*, because we said that *some man is not a physician.* This arises, as I said, from the very nature of the negation which we have just explained, which is, that in negative propositions the attribute is always taken universally, and according to the whole of its extension; so that, when a particular subject becomes the attribute, by conversion, in a particular negative proposition, it becomes universal, and changes its nature contrary to the rules of true conversion, which ought not to change the extension or limitation of the terms. Thus, in this proposition, *Some man is not a physician*, the term, man, is taken particularly; but in this false conversion, *Some physician is not a man*, the word man is taken universally. Now, because the quality of physician is separated from some man in this proposition, *Some man is not a physician*, and because the idea of triangle is separated from that of some figure in the other proposition, *Some figure is not a triangle*,—it by no means follows that there are physicians which are not men, and triangles which are not figures.

THIRD PART.

OF REASONING.

That part of which we now have to treat, and which comprehends the rules of reasoning, is regarded as the most important in logic, and is almost the only one which has been treated of with any care. But it may be doubted whether it is really as useful as it has been supposed to be. The greater part of the errors of men, as we have already said elsewhere, arises much more from their reasoning on false principles, than from their reasoning wrongly on their principles. It rarely happens that men allow themselves to be deceived by reasonings which are false, only because the consequences are ill deduced; and those who are not capable of discovering such errors by the light of reason alone, would not commonly understand the rules which are given for this purpose, much less the application of them. Nevertheless, considering these rules simply as speculative truths, they may always be useful as mental discipline; and, further than this, it cannot be denied that they are of service on some occasions, and in relation to those persons who, being of a lively and inquiring turn of mind, allow themselves, at times, for want of attention, to be deceived by false consequences, which attention to these rules would probably rectify. Be this as it may, the following chapters contain what is commonly said on this subject, and, indeed, somewhat more.

CHAPTER I.

OF THE NATURE OF REASONING, AND OF THE DIFFERENT KINDS OF IT WHICH MAY BE DISTINGUISHED.

THE necessity of reasoning is founded exclusively on the narrow limits of the human mind, which, having to judge of the truth or falsehood of a proposition—which is, in this connection, termed the *question*—is not always able to do this by the consideration of the two ideas which compose it, of which that which is the *subject* is also called *the minor term*, because the subject is generally less extended than the attribute; and that which is the *attribute* is also called the *major term*, for a contrary reason. When, therefore, the consideration of these two ideas is not sufficient to enable us to determine whether we should affirm or deny the one of the other, it is necessary to have recourse to a *third idea*, either complex or incomplex (according to what we have said of complex terms), and this third idea is called *the mean* (or *middle term*).

Now, it would be of no service, for the purpose of effecting this comparison of the two ideas through the medium of this third idea, to compare it with only one of the two terms. If I wish to know, for example, whether the *soul is spiritual*, and not seeing clearly into the question at first, should choose the idea of *thought* in order to make it clear to me, it is manifest that it would be useless to compare *thought* with the *soul*, unless I conceive that it had some relation to the attribute *spiritual*, by means of which I might be able to judge whether it belonged, or did not belong, to the soul. I may say, indeed, for example, *the soul thinks;* but I shall not be able to conclude that it is *therefore spiritual*, unless I conceive *some relation* to exist between the terms *thinking* and *spiritual.*

It is necessary, therefore, that the *middle term* be compared both with the *subject* or *minor term*, and with the *attribute* or *major term*,—whether this be done separately

with each of these terms, as in the syllogisms which are for this reason called *simple;* or with both the terms at once, as in the arguments which are called *conjunctive.*

But in either way this comparison demands two propositions. We shall speak of the conjunctive arguments in detail; but in relation to the simple ones this is clear, since the middle term, being once compared with the attribute of the conclusion (which can only be done by affirming or denying), makes the proposition which is called the *major*, because this attribute of the conclusion is called the *major term.*

And being again compared with the subject of the conclusion, makes what is called the *minor* (proposition), because the subject of the conclusion is called the *minor term.*

And then the conclusion, which is the proposition itself which had to be proved, and which, before it was proved, was called THE QUESTION.

It is well to know that the two first propositions are also called *premises* (*premissæ*), because they are placed (in the mind at least) before the conclusion, which ought to be a necessary consequence from them, if the syllogism be good: that is to say, that, supposing the truth of the premises, the truth of the conclusion necessarily follows.

It is true that the two premises are not always expressed, because often one alone is sufficient to enable the mind to conceive them both; and when we thus express only two propositions, this sort of reasoning is called *enthymeme*, which is a real syllogism in the mind, since it applies the proposition which is not expressed, but which is imperfect in expression, and affords its conclusion only in virtue of that suppressed proposition.

I said that there were at least *three propositions* in a reasoning; but there may be *many more* without rendering it defective on that account, provided always that the rules be observed. For if, after having consulted a third idea, in order to know whether an attribute belongs, or does not belong, to a subject, and after having compared it with one of the terms, not knowing as yet whether it belongs, or does not belong, to the second term,—I might choose a *fourth* in order to make this clear to me, and a *fifth*, if that

is not sufficient, until I arrive at an idea which connects the attribute of the conclusion with the subject.

If I question, for example, *whether avaricious men are miserable*, I may consider, first, that the *avaricious are full of desires and passions;* if this does not afford ground for the conclusion, that *therefore they are miserable*, I may examine what it is to be full of desires, and I shall find in this idea that *of being without many things which are desired*, and *misery* in this privation of things which are desired; which will enable me to form this reasoning:—*Avaricious men are full of desires; those who are full of desires want many things, since it is impossible for them to satisfy all their desires; those who are without that which they desire are miserable; therefore avaricious men are miserable.*

Such reasonings as these, composed of many propositions, of which the second depends on the first, and so of the rest, are called *sorites*, and are those which are most common in mathematics. But because, when they are long, the mind has more difficulty in following them, and the three propositions are better adapted to the capacity of the mind, we have taken more pains in examining the rules of good and bad syllogisms, that is to say, of arguments of three propositions. This it is well to follow, since the rules which are given for these may be easily applied to all the reasonings which are composed of many propositions, inasmuch as they may all be reduced to syllogisms, if they are good.

CHAPTER II.

DIVISION OF SYLLOGISMS INTO SIMPLE AND CONJUNCTIVE, AND OF SIMPLE INTO COMPLEX AND INCOMPLEX.

SYLLOGISMS are *simple* or *conjunctive*. The simple, are those in which the *middle term is joined to only one of the*

terms of the conclusion at the same time; the conjunctive, are those in which it is *joined to both.* Thus this argument is simple:—

Every good prince is loved by his subjects;
Every pious king is a good prince;
Therefore every pious king is loved by his subjects;

because the *middle term* is joined separately to *pious king*, which is the *subject* of the *conclusion;* and to *be loved by his subjects*, which is its *attribute.* But the following is conjunctive, for the opposite reason:—

If an elective state is subject to divisions, it is not of long duration;
Now an elective state is subject to divisions;
Therefore an elective state is not of long duration;

since *elective state*, which is the subject, and *of long duration*, which is the attribute, enter into the major proposition.

As these kinds of syllogisms have separate rules, we shall treat of them separately.

Simple syllogisms, which are those in which the middle term is joined separately with each term of the conclusion, are also of two sorts.

The one, in which each term is joined completely with the middle, to wit, with the whole attribute in the major, and with the whole subject in the minor.

The other, in which, the conclusion being complex, that is to say, composed of complex terms, we take only a part of the attribute, or a part of the subject, to join with the middle in one of the propositions, and all the rest, which forms only a single term, to join with the middle in the other proposition.

The divine law binds us to honour kings;
Louis XIV. is king;
Therefore the divine law binds us to honour Louis XIV.

We call the first kinds of arguments plain and incomplex, and the others involved or complex; not that all those in which there are complex propositions are of this last kind, but because there are none of this last kind in which there are not complex propositions.

Now, although the rules which are commonly given for simple syllogisms may hold in all complex syllogisms, by

reversing them, nevertheless, as the strength of the conclusion does not depend on that inversion, we shall here apply the rules of simple syllogisms only to the incomplex, reserving complex syllogisms to be treated of separately.

CHAPTER III.

GENERAL RULES OF SIMPLE INCOMPLEX SYLLOGISMS.

[This Chapter, and the following ones until the twelfth, are among the number of those spoken of in the *Discourses*, containing things which are subtile, and necessary to the speculative part of logic, but which are of little practical utility.]

We have seen already, in the preceding chapters, that a simple syllogism ought to have only *three terms*, two terms for the conclusion, and a single middle term, each of which being repeated twice, constitutes *three propositions:* the major, into which the middle term and the attribute of the conclusion (which is called the *greater* term) enter; the minor, into which, also, the middle term and the subject of the conclusion (which is called the *smaller* term) enter; and the conclusion, of which the lesser term is the subject, and the greater term the attribute.

But because all sorts of conclusions cannot be obtained from all sorts of premises, there are general rules which show that a conclusion cannot be properly obtained in a syllogism in which they are not observed, and these rules are founded on the axioms which were established in the Second Part, touching the nature of propositions affirmative and negative, universal and particular. These, such as they are, we shall only state, having proved them elsewhere.

1. *Particular* propositions are contained in *general* ones

of the same nature, not the general in the particular,—I in A, and O in E, and not A in I, or E in O.

2. The *subject* of a proposition, *taken universally* or *particularly*, is that which renders it *universal* or *particular*.

3. The *attribute* of an affirmative proposition having never more extension than the subject, is *always considered as taken particularly*, since it is only by accident that it is sometimes taken generally.

4. The *attribute* of a negative proposition is *always taken generally*.

It is mainly on these axioms that the general rules of syllogisms are founded, which rules we cannot violate without falling into false reasonings.

RULE 1.

The middle term cannot be taken twice particularly, but it ought to be taken, once at least, universally.

For, before uniting or disuniting the two terms of the conclusion, it is clear that this cannot be done if it is taken for two differents parts of the same whole, since it may, perhaps, not be the same part which is united or separated from these terms. Now, if taken twice particularly, it may be taken for two different parts of the same whole, and, consequently, nothing could be concluded, at least *necessarily*, which is enough to render an argument vicious, since we can only call that a good syllogism, as we have already said, of which the *conclusion cannot be false*, the *premises being true*. Thus, in this argument—*some man is holy, some man is a thief, therefore some thief is holy*, the word man being taken for different parts of mankind, cannot unite *thief* with *holy*, since it is not the same man who is holy, and who is a thief.

We cannot say the same of the subject and attribute of the conclusion; for, though they be taken twice particularly, they may, nevertheless, unite them together, by uniting one of these terms to the middle, in the whole extension of the middle term; for it follows hence, very clearly, that if this middle is united in some one of its parts to some part of the other term, that first term, which we have already stated to be united to all the middle, will

be united also with the term to which some part of the middle is joined. If there are some Frenchmen in every house in Paris, and if there are Germans in some houses in Paris, then there are some houses in which Frenchmen and Germans are together.

If some rich men are fools,
And all rich men are honoured,
Then are some fools honoured;

for the rich men who are fools are also honoured, since all are honoured; and, consequently, in these rich fools which are honoured, the qualities of fool and honour are joined together.

Rule 2.

The terms of the conclusion cannot be taken more universally in the conclusion than they are in the premises.

Hence, when either term is taken universally in the conclusion, the reasoning will be false if it is taken particularly in the two first propositions.

The reason is, that we cannot conclude anything from the particular to the general (according to the first axiom), for, from the fact that some man is black, we cannot say that all men are black.

1st Corollary.

There must always be *in the premises one universal term more than in the conclusion*, for every term which is general in the conclusion ought to be so also in the premises, and besides, the middle term must be taken at least once generally.

2d Corollary.

When the conclusion is negative, *the greater term must necessarily be taken generally in the major*, for it is taken *generally* in the *negative conclusion* (by the fourth axiom), and, consequently, it must be taken generally in the *major* (by the second rule).

3d Corollary.

The *major (proposition) of an argument whose conclusion is negative, can never be a particular affirmative*, for the subject and attribute of an affirmative proposition are both taken particularly (by the second and third axioms), and thus the greater term would be taken only particularly, contrary to the second corollary.

4th Corollary.

The *lesser term is always in the conclusion as in the premises*, that is to say, that as it can be only particular in the conclusion, as it is particular in the premises, it may, on the contrary, be always general in the conclusion when it is so in the premises; for the lesser term could not be general in the minor when it is the subject of it, unless it be generally united to the middle; and it cannot be the attribute, and be taken generally in it, unless the proposition be negative, because the attribute of an affirmative proposition is always taken particularly. Now, negative propositions denote that the attribute, taken in its full extension, is separated from the subject.

And, consequently, a proposition in which the lesser term in general denotes either a union of the middle term with the whole of the lesser term, or a separation of the middle from the whole lesser term.

Now if, through this union of the middle with the lesser term, we conclude that another idea is joined to this lesser term, we ought to conclude that it is joined to all the lesser term, and not to a part alone, for, the middle being joined to all the lesser term, nothing can be proved by this union of one part, which cannot also be proved of the others, since it is joined to them all.

In the same way, if the separation of the middle term from the lesser term, prove anything of any part of that lesser term, it proves the same of all the parts, since it is equally separated from them all.

5th Corollary.

When the minor is a universal negative, if we wish to

obtain a legitimate conclusion, *it must always be general.* This is a consequent of the preceding corollary, for the smaller term must be taken generally in the minor, when it is a universal negative, whether it be its subject (by the second axiom), or whether it be the attribute of it (by the fourth axiom).

RULE 3.

No conclusion can be drawn from two negative propositions.

For two negative propositions separate the subject from the mean, and the attribute from the same mean. Now, because two things are separated from the same thing, it does not follow either that they are, or that they are not, the same; for because the Spaniards are not Turks, and the Turks are not Christians, it does not follow that the Spaniards are not Christians; neither does it follow that the Chinese are so, though they are not Turks any more than the Spaniards.

RULE 4.

A negative conclusion cannot be proved by two affirmative propositions.

For from the fact that the two terms of the conclusion are united with the third, it cannot be proved that they are separated from each other.

RULE 5.

The conclusion always follows the weaker part, that is to say, if two propositions be negative, it ought to be negative, and if one of them be particular, it ought to be particular.

The proof of this is, that if there be a negative proposition the middle term is separated from one of the parts of the conclusion, and thus it is incapable of uniting them, which must be done in order to conclude affirmatively.

And if there be one particular proposition, the conclusion cannot be general, for if the conclusion is general affirmative, the subject being universal, it must also be universal in the minor, and consequently its subject,—the

attribute being never taken universally in affirmative propositions. Therefore the middle term joined to this subject, will be particular in the minor, and hence it will be general in the major, because otherwise it would be taken twice particularly. It will be, therefore, its subject, and consequently that major term will be also universal, and thus there cannot be a particular proposition in an affirmative argument whose conclusion is general.

This is still more clear in the case of universal negative conclusions, for then it would follow that there ought to be three universal terms in the two premises, according to the first corollary. Now, as there must be an affirmative proposition by the third rule, whose attribute is taken particularly, it follows that the other three terms are taken universally, and, consequently, the two subjects of the two propositions, which makes them universal, Q, E, D.

6th Corollary.

The particular is inferred from the general. What infers A infers I, what infers E infers O, but what infers the particular does not infer the general. This is a consequent of the preceding rule, and of the first axiom; but it must be remarked that men have thought right to consider the species of syllogism only according to its worthier conclusion, which is the general, so that we do not reckon as a particular species of syllogism that which infers only particularly, when it might have a general conclusion.

Hence there is no syllogism in which the major being A, and the minor E, the conclusion is O, for (by the 5th corollary) the conclusion of a negative universal minor must be always general, so that if we cannot obtain a general conclusion, it will be because we cannot obtain any at all. Thus A, E, O, is never a syllogism separately, but only so far as it may be contained in A, E, E.

Rule 6.

From two particular propositions nothing follows.

For if there are two affirmatives, the middle will be taken twice particularly, whether it be the subject (by the

2d axiom) or whether it be the attribute (by the 3d axiom). Now, by the 1st rule, nothing can be concluded from a syllogism whose middle term is taken twice particularly.

And if there be a negative, the conclusion being negative also, by the rule preceding, there must be at least two universal terms in the premises (according to the 2d corollary). Therefore there ought to be a universal proposition in these two premises, since it is impossible to arrange three terms in two terms, where two terms must be taken universally, without having either two negative attributes, which would be contrary to the 3d rule, or one of the subjects universal, which makes the proposition universal.

CHAPTER IV.

OF THE FIGURES AND MODES OF SYLLOGISMS IN GENERAL.—THAT THERE CANNOT BE MORE THAN FOUR FIGURES.

After establishing the *general rules* which must necessarily be observed in all simple syllogisms, it remains to show *how many sorts* there are of such syllogisms.

We may say in general that there are as many sorts as there may be different ways of arranging the three propositions of a syllogism, and the three terms of which they are made up, without violating the rules which we have laid down.

The arrangement of the three propositions according to the four differences, A, E, I, O, is called *mood*,—and the arrangement of the three terms, that is to say, of the middle term with the two terms of the conclusion, is called *figure*.

Now we may reckon how many moods there are which afford a conclusion, without taking into account the different figures in which the same mood may constitute different syllogisms, for, by the doctrine of combinations, four

terms (as A, E, I, O), being taken three by three, can be differently arranged only in sixty-four ways. But of these sixty-four ways, those who will take the trouble to consider each apart, will find that there are of them,—

Twenty-eight excluded by the third and sixth rules,—nothing can be concluded from two negatives, or from two particulars.

Eighteen by the fifth,—that the conclusion follows the weaker part.

Six by the fourth,—that we cannot have a negative conclusion from two affirmatives.

One, I, E, O, to wit, by the third corollary of the general rules.

One, A, E, O, to wit, by the sixth corollary of general rules.

These make in all fifty-four, and, consequently, only ten valid moods remain:

Four affirmative { A, A, A. / A, I, I. / A, A, I. / I, A, I. }

Six negative { E, A, E. / A, E, E. / E, A, O. / A, O, O. / O, A, O. / E, E, O. }

But it does not follow from this that there are only ten sorts of syllogisms, since any one of these moods may be made into different syllogisms, according to the other way in which they are diversified, by the different arrangement of the three terms, which we have already said is called *figure*.

Now, in order to this disposition of the three terms, the two first propositions alone are to be considered, since the conclusion is supposed before we make the syllogism to prove it; and as the middle can be arranged only, with the two terms of the conclusion, in four different ways, there are thus also only four possible figures.

For the middle term is either *the subject in the major, and the attribute in the minor*, which makes the *first figure*.

Or it is *the attribute in both*, which makes the *second figure*.

Or the subject in both, which makes the *third figure*.

Or finally, it is the attribute in the major, and subject in the

minor, which makes a *fourth figure*, since it is certain that we may sometimes have a necessary conclusion in this form, which is sufficient to constitute a valid syllogism. Examples of these will be given hereafter.

Nevertheless, since, in this fourth figure, the conclusion is obtained in a way that is by no means natural, and which the mind never takes, Aristotle, and those who have followed him, have not given to this mode of reasoning the name of figure. Galen maintained the contrary; but it is clear that it is only a dispute about words, which ought to be decided by making each party say what they understand by the word figure.

But, without doubt, those are mistaken who apply to the fourth figure (which they blame Aristotle for not recognising) the arguments of the first, of which the major and minor are transposed, as when we say, *All body is divisible; all that is divisible is imperfect; therefore all body is imperfect.* I am surprised that Gassendi has fallen into this error, for it is ridiculous to take, as a major of a syllogism, the proposition which stands first, and for the minor that which stands second. If this were so, it would be often necessary to take the conclusion itself as the major, or minor of a reasoning, since it is often enough placed first or second of the three propositions which compose it, as in this verse of Horace, the conclusion is the first, the minor second, and the major third.

> Qui melior servo, qui liberior sit avarus;
> In triviis fixum, cum se dimittit ad assem
> Non video: nam qui cupiet, metuet quoque: porrò
> Qui metuens vivit, liber mihi non erit unquam.

For it is all reducible to this argument:

He who is in continual fear is not free,
Every miser is in continual fear;
Therefore no miser is free.

We are not, therefore, to consider the simple local arrangement of the propositions, which effects no change on the mind; but we are to take, as syllogisms of the first figure, all those in which the middle term is subject, in the proposition where the greater term (that is to say, the attribute of the conclusion) is found, and the attribute in that where the lesser term (that is to say, the subject of

the conclusion) is found. And thus it follows, that those syllogisms only are of the fourth figure, where the middle term is attribute in the major, and subject in the minor. And it is in this way that we shall speak of the figures, without any being able to complain of our so doing, since we have stated beforehand that we understand, by this word *figure*, only a different arrangement of the middle term.

CHAPTER V.

RULES, MOODS, AND PRINCIPLES OF THE FIRST FIGURE.

THE first figure is, then, that in which the middle term is subject in the major proposition, and attribute in the minor.

This figure has only two rules.

RULE 1.

The minor must be affirmative;

For, if it were negative, the major would be affirmative by the third general rule, and the conclusion negative by the fifth; therefore the greater term would be taken universally in the conclusion, since it would be negative, and particularly in the major; for it is its attribute in this figure, and would be affirmative, thus violating the second rule, which forbids us to conclude from the particular to the general. This reason holds also in the third figure, where the greater term is also attribute in the major.

RULE 2.

The major must be universal;

For, the minor being affirmative, by the preceding rule,

the middle term, which is its attribute, is taken particularly; therefore it must be universal in the major, where it is subject, which renders this proposition universal; otherwise it will be taken twice particularly, contrary to the first general rule.

DEMONSTRATION.

That *the first figure can have only four moods.*

We have shown, in the preceding chapter, that there can be only ten valid moods; but of these ten moods, A, E, E, and A, O, O, are excluded by the first rule of this figure, viz., that the minor must be affirmative; I, A, I, and O, A, O, are excluded by the second, which is, the major must be universal; A, A, I, and E, A, O, are excluded by the fourth corollary from the general rules, for the lesser term being the subject in the minor, if it be universal, the conclusion may be universal also.

And, consequently, there remain only these four moods:

Two affirmative { A, A, A. / A, I, I. } Two negative { E, A, E. / E, I, O.

Which was to be demonstrated.

These four moods, in order that they may be more easily retained, have been reduced to artificial words, of which the three syllables denote the three propositions, and the vowel of each syllable points out of what kind the proposition ought to be; so that these words have been of this great service in the schools, that they denote clearly, by a single word, a species of syllogism, which otherwise could not have been explained without much circumlocution:

BAR- *Whoever suffers those whom he ought to support to die of hunger, is a murderer.*

BA- *All the rich who do not give alms in times of public necessity, suffer those to die of hunger whom they ought to support;*

RA. *Therefore they are homicides.*

CE- *No impenitent thief can expect to be saved;*
LA- *All those who die without making restitution, after having enriched themselves with the wealth of the church, are impenitent thieves;*
RENT. *Therefore none such can expect to be saved.*
DA- *Everything which is a help to salvation is beneficial.*
RI- *There are some afflictions which are helps to salvation;*
I. *Therefore there are some afflictions which are beneficial.*
FE- *Whatever is followed by a just repentance is not to be wished for;*
RI- *There are some pleasures which are followed by a just repentance;*
O. *Therefore there are some pleasures which are not to be wished for.*

BASIS OF THE FIRST FIGURE.

'Since in this figure the greater term is affirmed or denied of the middle, taken universally, and this same middle is then affirmed in the minor of the lesser term, or subject of the conclusion, it is clear that it is founded on two principles, one for the affirmative moods, the other for the negative moods.

PRINCIPLE OF THE AFFIRMATIVE MOODS.

That which belongs to an idea, taken universally, belongs also to everything of which that idea is affirmed, or which is subject of that idea, or which is comprehended under the extension of this idea; for these expressions are synonymous.

Thus the idea of *animal* belonging to all men, belongs also to all Ethiopians. This principle has been so clearly explained in the chapter where we treated of the nature of affirmative propositions, that it is not necessary to say more of it here. It is sufficient to state, that it is commonly expressed in the schools in the following manner; —*Quod convenit consequenti, convenit antecedenti;* and that, by the term consequent, is understood the general idea which is affirmed of another, and, by antecedent, the sub-

ject by which it is affirmed, since, in reality, the attribute is obtained, as a consequent from the subject,—if it be man, it is also animal.

PRINCIPLE OF NEGATIVE MOODS.

Whatever is denied of an idea, taken universally, is denied also of everything of which that idea is affirmed.

Tree is denied of all animals; it is, therefore, denied of all men, since they are animals. It is commonly expressed in the schools, thus:—*Quod negatur de consequenti, negatur de antecedenti.* What we have said, in treating of negative propositions, renders it unnecessary to say more here.

It must be remarked, that it is only in the first figure that we obtain a conclusion in all the four—A, E, I, O.

And that it is in the first alone that we obtain a conclusion in the form of A; the reason of which is, that in order to make the conclusion a universal affirmative, the lesser term must be taken generally in the minor, and, consequently, be its subject, and the middle term its attribute; whence it happens that the middle is there taken particularly. It must, therefore, be taken generally in the major by the first general rule, and, consequently, be its subject. Now the characteristic of the first figure is, that the middle term be subject in the major proposition, and attribute in the minor.

CHAPTER VI.

RULES, MOODS, AND PRINCIPLES OF THE SECOND FIGURE.

THE second figure is that in which the middle term is taken twice as attribute; whence it follows, that, in order to its concluding necessarily, it must observe these two rules,—

RULE 1.

One of the two propositions must be negative, and, consequently, the conclusion also, by the sixth general rule;

For, if both propositions were affirmative, the middle, which is here always attribute, would be taken twice particularly, contrary to the first general rule.

RULE 2.

The major proposition must be universal;

For, the conclusion being negative, the greater term, or attribute, is taken universally. Now, this same term is subject in the major; therefore it must be universal, and, consequently, render the major universal.

DEMONSTRATION.

That there can be only four moods in the second figure.

Of the ten valid moods the four affirmative are excluded by the first rule of this figure, which is, that one of the premises must be negative.

O, A, O, is excluded by the second rule, which is, that the major must be universal.

E, A, O, is excluded for the same reason as in the first figure; for the lesser term is also subject in the minor.

There remain, therefore, of these ten moods, only these four:—

Two general, { E, A, E. / A, E, E. } Two particular, { E, I, O. / A, O, O.

Which was to be demonstrated.

These four moods have been comprehended under the following artificial words:—

CE- *No liar is to be believed;*
SA- *Every good man is to be believed;*
RE. *Therefore no good man is a liar.*
CA- *All those who are followers of Jesus Christ crucify the flesh;*
MES- *All those who lead an effeminate and voluptuous life do not crucify the flesh;*
TRES. *Therefore none such are followers of Jesus Christ.*

FES- *No virtue is contrary to the love of truth;*
TI- *There is a love of peace which is opposed to a love of truth;*
NO. *Therefore there is a love of peace which is not a virtue.*
BA- *Every virtue is accompanied with discretion.*
RO- *There is a zeal without discretion;*
CO. *Therefore there is a zeal which is not a virtue.*

BASIS OF THE SECOND FIGURE.

It would be easy to reduce all these different sorts of reasonings to a single principle, by a little explanation; but it is more beneficial to reduce two of them to one principle, and two to another, since their dependence on these two principles, and the connection they have with them, is more clear and immediate.

1. PRINCIPLES OF THE ARGUMENTS IN *Cesare* AND *Festino.*

The first of these principles is that which serves also as a basis for the negative arguments of the first figure, to wit, *that which is denied of a universal idea is denied also of everything of which that idea is affirmed, that is to say, of all the subjects of that idea;* for it is clear that the arguments in *Cesare* and *Festino* are established on this principle. In order to show, for example, that no good man is a liar, I affirmed, *to be believed* of every good man, and I denied liar of every man who was *to be believed*, by saying that no liar is to be believed. It is true that this aspect of denying is indirect, since, in place of denying liar *to be believed*, I denied *to be believed* of liar. But, as universal negative propositions are converted simply by denying the attribute of a universal subject, we deny that universal subject of the attribute.

This shows, notwithstanding, that the reasonings in *Cesare* are, in some sort, indirect, since that which is denied of them is only denied indirectly; but as this does not prevent the mind from comprehending, easily and clearly, the force of the argument, they may be considered as direct, understanding by this term reasonings, clear and natural.

This also shows that the two moods, *Cesare* and *Festino*, differ from *Celarent* and *Ferio* of the first, only in having their major reversed. But though we may say that the negative moods of the first figure are more direct, it often happens, nevertheless, that these two of the second figure, which answer to them, are more natural, and that the mind more readily employs them. For example, in that which we have given, although the direct order of negation require us to say, No man is to be believed who is a liar, which would have made an argument in *Celarent*, the mind is, nevertheless, naturally led to say, No liar is to be believed.

PRINCIPLES OF THE ARGUMENTS IN *Camestres* AND *Baroco*.

In these two moods the middle term is affirmed of the attribute of the conclusion, and denied of the subject, which shows that they are established directly on this principle: *Nothing that is comprehended under the extension of a universal idea belongs to any of the subjects of which that idea is denied, the attribute of a negative proposition being taken in the whole of its extension, as we have proved in the Second Part.*

True Christians are comprehended under the extension of charitable, since every true Christian is charitable; charitable is denied of those who are pitiless towards the poor; therefore true Christian of those who are without mercy towards the poor;—which makes this argument—

Every true Christian is charitable;
None who are without pity for the poor are charitable;
Therefore none who are without pity to the poor are true Christians.

CHAPTER VII.

RULES, MOODS, AND PRINCIPLES OF THE THIRD FIGURE.

IN the third figure the middle term is twice taken as subject, whence it follows:—

RULE 1.

That the minor proposition must be affirmative;

This we have already proved by the first rule of the first figure, since in both the attribute of the conclusion is also the attribute of the major.

RULE 2.

The conclusion must be particular.

For the minor being always affirmative, the lesser term, which is its attribute, is particular. Therefore, it cannot be universal in the conclusion, where it is subject, since this would be to infer the general from the particular, contrary to the second general rule.

DEMONSTRATION.

That there can be no more than six moods in the third figure.

Of the ten valid moods, A, E, E, and A, O, O, are excluded by the first rule of this figure, which is, that the minor be not negative.

A, A, A, and E, A, E, are excluded by the second rule, which is, that the conclusion cannot be general. There remain, therefore, these six moods:

3 affirmative	A, A, I. A, I, I. I, A, I.	3 negative	E, A, O. E, I, O. O, A, O.

Which was to be demonstrated.

These six moods have been reduced to the following artificial words, though in a different order:—

DA- *The infinite divisibility of matter is incomprehensible;*
RA- *The infinite divisibility of matter is most certain;*
PTI. *There are, therefore, some things most certain which are incomprehensible.*

FE- *No man is able to abandon himself;*
LA- *Every man is an enemy to himself;*
PTON. *There are, therefore, some enemies which he cannot abandon.*

DI- *There are some wicked men in the highest state;*
SA- *All wicked men are miserable;*
MIS. *Therefore there are some miserable who are in the highest state.*

DA- *Every servant of God is a king;*
TI- *Some servants of God are poor;*
SI. *Therefore some poor are kings.*

BO- *There is some anger which is not blameworthy;*
CAR- *Every kind of anger is a passion;*
DO. *Therefore some passions are not blameworthy.*

FE- *No folly is eloquent;*
RI- *There is some folly put into figures;*
SON. *Therefore there are figures which are not eloquent.*

BASIS OF THE THIRD FIGURE.

The two terms of the conclusion being attributed, in the premises, to a single term, which serves as the middle, we may reduce the affirmative moods to this figure to the following principle:—

PRINCIPLE OF AFFIRMATIVE MOODS.

When two terms may be affirmed of the same thing, they may also be affirmed taken particularly.

For, being united together in that thing, since they belong to it, it follows that they are sometimes united together, so that they may be affirmed the one of the other particularly. But in order that we may be sure that these terms have been affirmed of the same thing, which is the middle term, it is necessary that this middle term be taken once universally at least; for if it were taken twice particularly, they might be two different parts of a common term, which would not be the same thing.

PRINCIPLE OF NEGATIVE MOODS.

When of two terms one may be denied, and the other affirmed, of the same thing, they may be denied particularly of each other.

For it is certain they are not always joined together, since they are not joined in this thing; therefore we may sometimes deny them of each other, that is to say, we may deny them of each other, taken particularly. But it is necessary, for the same reason, in order to its being the same thing, that the middle term be taken universally once at least.

CHAPTER VIII.

OF THE MOODS OF THE FOURTH FIGURE.

THE fourth figure is that in which the middle term is attribute in the major, and subject in the minor. But it is so far from natural, that it is almost useless to give the rules for it; they are, however, given below, in order that nothing may be wanting to the demonstration of all the simple forms of reasoning.

RULE 1.

When the major proposition is affirmative, the minor is always universal.

For the middle term is taken particularly in the affirmative major, since it is its attribute. It must, therefore, by the first general rule, be taken generally in the minor, and consequently render it universal, since it is its subject.

RULE 2.

When the minor is affirmative, the conclusion is always particular.

For the lesser term is attribute in the minor, and, consequently, is there taken particularly when it is affirmative. Whence it follows (by the second general rule) that it

must be also particular in the conclusion, which renders it particular, since it is its subject.

Rule 3.

In the negative moods the major proposition must be general.

For the conclusion being negative, the greater term is there taken generally. It must, therefore (by the second general rule), be also taken generally in the premises. Now it is here, as in the second figure, the subject of the major, and consequently it must, as in the second figure, being taken generally, render the major general.

DEMONSTRATION.

That there can be no more than five moods in the fourth figure.

Of the ten valid moods, A, I, I, and A, O, O, are excluded by the first rule; A, A, A, and E, A, E, are excluded by the second; O, A, O, by the third.

There remain, therefore, only these five:—

2 affirmative { A, A, I. / I, A, I.

3 negative { A, E, E. / E, A, O. / E, I, O.

These five moods may be embodied in the following artificial words:—

Bar- *All the miracles of nature are common;*
ba- *Whatever is common does not arrest our attention;*
ri. *Some things, therefore, which do not arrest our attention, are miracles of nature.*

Ca- *All the evils of life are transitory evils;*
len- *No transitory evils are to be feared;*
tes. *Therefore none of the evils that are to be feared are evils of this life.*

Di- *Some fools speak the truth;*
ba- *Whoever speaks the truth deserves to be imitated;*
tis. *Therefore there are some who deserve to be imitated, who are nevertheless fools.*

Fes- *No virtue is a natural quality;*
pa- *Every natural quality has God for its author;*
mo. *Therefore there are qualities which have God for their author, which are not virtues.*

FRE- *No miserable man is content;*.
SI- *Some are content who are poor;*
SOM. *Therefore there are poor people who are not unhappy.*

It is well to state that these five moods are commonly expressed in this way, *Baralipton*, *Celantes*, *Dabitis*, *Fapesmo*, *Frisesomorum*. This arose from the fact that Aristotle never having made a separate figure for these moods, they were regarded as only indirect moods of the first figure, since it was maintained that their conclusion was reversed, and that the attribute was the real subject. Hence, those who have followed this opinion, have placed as the first proposition, that which contains the subject of the conclusion, and as the minor, that which contains the attribute. Thus they have given nine moods to the first figure, four direct, and five indirect, which they have included in these two verses :

Barbara, Celarent, Darii, Ferio, Baralip-*ton*.
Celantes, Dabitis, Fapesmo, Frisesom-*orum*.

And for the two other figures—

Cesare, Camestres, Festino, Baroco, Darapti,
Felapton, Disamis, Datisi, Bocardo, Ferison.

But as the conclusion is always supposed, since it is that which we design to prove, we cannot say properly that it is ever reversed; we, therefore, thought it better to take always, as the major, the proposition into which the attribute of the conclusion enters, which obliged us, in order to put the major first, to reverse these artificial terms, so that, for the better retaining of them, we may include them in this verse :—

Barbari, Calentes, Dibatis, Fespamo, Frisesom.

RECAPITULATION

Of the different Sorts of Syllogisms.

From all that we have just said, it may be concluded that there are nineteen kinds of syllogisms, which may be divided in different ways.

I. Into { General 5. / Particular 14. } II. Into { Affirmative 7. / Negative 12. }

III. Into those which give conclusions in { A—1. / E—4. / I—6. / O—8. }

4. According to the different figures, in subdividing them by moods, which has already been sufficiently done, in the explanation of each figure.

5. Or, on the contrary, according to the moods, in subdividing them by the figures, where we shall still find nineteen species of syllogisms, since there are three moods, each of which only concludes in a single figure; six, each of which is valid in two figures, and one which is valid in all the four.

CHAPTER IX.

OF COMPLEX SYLLOGISMS, AND THE WAY IN WHICH THEY MAY BE REDUCED TO COMMON SYLLOGISMS, AND JUDGED OF BY THE SAME RULES.

It must be confessed, that if there are some to whom logic is a help, there are many to whom it is a hindrance; and it must be acknowledged, at the same time, that there are none to whom it is a greater hindrance than to those who pride themselves most upon it, and who affect, with the greatest display, that they are good logicians; for this very affectation, being the mark of a low and shallow mind, it comes to pass that they, attaching themselves more to the exterior of the rules than to good sense, which is the soul of them, are easily led to reject as bad reasoning, some which are very good, since they have not suf-

ficient penetration to adjust them to the rules, which serve no other purpose than to deceive them, because they comprehend them only imperfectly.

In order to avoid this defect, which partakes strongly of that pedantry which is so unworthy in a noble minded man, we ought rather to examine the solidity of a reasoning by the light of nature than by mere forms; and one of the means of satisfying ourselves, when we meet with any difficulty, is to make other reasonings similar to it in different matters, and when it appears clearly to us to afford a good conclusion, by considering only the good sense of it; if we find, at the same time, that it contains something not conformed to the rules, we ought rather to believe that this is owing to some defect in our explication than to its being so in reality.

But the reasonings of which it is more difficult to judge aright, and in which it is more easy to be deceived, are those which, as we have already said, may be called *complex*, not simply because there were found in them complex propositions, but because the terms of the conclusion being complex, were not taken in all their entirety, in each of the premises, in order to be joined with the middle, but only a part of one of the terms, as in this example—

The sun is a thing insensible;
The Persians worship the sun;
Therefore the Persians worship a thing insensible.

In which we see that the conclusion having its attribute, *worship a thing insensible*, only a part of this is placed in the major, to wit, *a thing insensible*, and *worshipped* in the *minor*.

Now we shall do two things in relation to these syllogisms. We shall show, in the first place, how they may be reduced to the incomplex syllogisms of which we have hitherto spoken, in order to their being judged by the same rules.

And we shall show, in the second place, that more general rules may be given, for judging at once of the validity or viciousness of these syllogisms, without having recourse to any reduction.

It is a thing strange enough, that although logic has occupied a higher position than it deserved, so that it has been maintained that it was absolutely necessary for

acquiring the sciences, it has, nevertheless, been treated of with so little attention, that hardly anything has been said touching aught that is of real use; for logicians commonly content themselves with giving the rules for simple syllogisms, and almost all the examples given of them are composed of incomplex propositions, which are so clear that no one would ever have thought of seriously composing them in any discourse; for who has ever heard of any one making such a syllogism as this: *Every man is an animal; Peter is a man; therefore Peter is an animal.*

But little pains are taken in applying the rules of syllogism to arguments of which the propositions are complex, though this is often very difficult, and there are many arguments of this nature which appear bad, which are nevertheless very good; and besides, the use of such reasonings is much more frequent than that of syllogisms which are quite simple. This will be shown more easily by examples than by rules.

Example 1.

We have said, for example, that all propositions composed of active verbs are complex in some manner; and of these propositions reasonings are often made, whose form and force are difficult to recognise; as this, which we have already given as an example—

The divine law commands us to honour kings;
Louis XIV. is a king;
Therefore the divine law commands us to honour Louis XIV.

Some persons of small intelligence have accused such reasonings of being defective, because, say they, they are composed of pure affirmatives in the second figure, which is an essential defect. But these persons have shown clearly that they have consulted more the letter and surface of the rules, than the light of reason, by which these rules were discovered; for this reasoning is so true and valid, that if it were opposed to the rule, it would prove that the rule was false, not that the reasoning was bad. I say that, in the first place, this argument is good; for in this proposition, *the divine law commands us to honour kings*,

—this word, kings, is taken generally for all kings in particular, and consequently Louis XIV. is among those whom the divine law commands us to honour.

I say, in the second place, that *king*, which is the middle term, is not the attribute in this proposition—*the divine law commands us to honour kings*—though it may be joined with the attribute command, which is a very different thing, for what, which is really the attribute, is affirmed, and agrees. Now, first, *king* is not affirmed, and does not agree with the law of God; second, the attribute is restricted by the subject. Now the word king is not restricted in this proposition—*the divine law commands us to honour kings*, since it is taken generally.

But if it is demanded, then, what it really is, it is easy to reply that it is the subject of another proposition involved in this; for when I say that the divine law commands us to honour kings, as I attribute command to the law, I attribute also honour to kings, for it is as if I said, *the divine law commands that kings be honoured.*

So also in this conclusion—*the divine law commands us to honour Louis XIV.*—Louis XIV. is not the attribute, although joined to it, and he is, on the contrary, the subject of an involved proposition; for it is the same as if I said, *the divine law commands that Louis XIV. be honoured.* Thus these propositions are unfolded in the following way:—

The divine law commands that kings be honoured;
Louis XIV. is king;
Therefore the divine law commands that Louis XIV. be honoured.

It is clear that the whole argument consists in these propositions:—

Kings ought to be honoured;
Louis XIV. is king;
Therefore Louis XIV. ought to be honoured.

And that this proposition—*the divine law commands*—which appears the principal, is only an incidental proposition, in this argument, joined to the affirmation, which the divine law helps to prove.

It is clear also that this reasoning is, in *Barbara* of the first figure, the individual terms, as Louis XIV., standing

for universals, as they are taken in all their extension, as we have already remarked.

Example 2.

For the same reason, this argument, which appears to be of the second figure, and conformed to the rules of that figure, is worth nothing:—

We ought to believe the Scripture;
Tradition is not Scripture;
Therefore we ought not to believe tradition.

For it ought to be reduced to the first figure in this way—

The Scripture ought to be believed;
Tradition is not Scripture;
Therefore tradition ought not to be believed.

Now we are not able to conclude anything from the first figure, from a negative minor.

Example 3.

There are other reasonings, the propositions of which appear to be pure affirmatives in the second figure, which are nevertheless very good, as:—

Every good pastor is ready to give his life for his sheep;
Now there are few pastors in the present day who are ready to give their lives for their sheep;
Therefore there are in the present day few good pastors.

But what makes this reasoning good is, that we conclude affirmatively only in appearance. For the minor is an exclusive proposition, which contains in sense this proposition,—*Most of the present pastors are not ready to give their lives for their sheep.* And the conclusion, also, may be reduced to this negative,—*Many of the present pastors are not good pastors.*

Example 4.

Here is another argument, which, being of the first figure, appears to have a negative minor:—

Those who cannot be robbed of what they love are out of the reach of their enemies;

Now, when a man loves God alone, he cannot be robbed of what he loves;
Therefore all those who love God alone, are out of the reach of their enemies.

What makes this argument quite valid is, that the minor is *negative* only in appearance, and is in reality *affirmative*, for the subject of the major, which ought to be the attribute in the minor, is not *those who may be robbed of what they love*, but, on the contrary, those *who cannot be robbed.* Now this is what we affirm of those who love God alone, so that the sense of the minor is, *Now all those who love God alone are among the number of those who cannot be robbed of what they love*, which is clearly an affirmative proposition.

EXAMPLE 5.

This is what happens again, where the major is an exclusive proposition, as,

Those only who love God are happy;
Now there are rich men who do not love God;
Therefore there are rich men who are not happy.

For the particle *only* makes the first proposition in this syllogism equal in meaning to these two—*the friends of God are happy*, and, *all others, who are not the friends of God, are not happy.*

Now, since it is on this second proposition that the force of the reasoning depends, the minor, which appears to be negative, becomes affirmative, since the subject of the major, which ought to be the attribute in the minor, is not *friends of God*, but *those who are not the friends of God*, so that the whole argument ought to stand thus:—

All those who are not the friends of God are not happy;
Now, there are rich men among the number of those who are no friends of God;
Therefore there are rich men who are not happy.

But what makes it necessary to express the minor in this way, and to take away from it the appearance of a negative proposition, is, that it is the same thing to say negatively, that a man is not the friend of God, and to say, affirmatively, that he is no friend of God, that is to say, that he is among the number of those who are not the friends of God.

Example 6.

There are many reasonings such as these, of which all the propositions appear negative, and which are, nevertheless, very good, because there is in them one which is negative only in appearance, and in reality, affirmative, as we have already shown, and as we may still further see by this example :—

That which has no parts cannot perish by the dissolution of its parts;

The soul has no parts;

Therefore the soul cannot perish by the dissolution of its parts.

There are several who advance such syllogisms to show that we have no right to maintain that this, *nothing can be proved by pure negatives*, is true generally, without distinction; but they have not observed that in sense, the minor of this and such other syllogisms, is affirmative, since the middle, which is the subject of the major, is in it the attribute. Now the subject of the major is not that which has parts, but that which has not parts, and thus the sense of the minor is, *the soul is a thing without parts*, which is a proposition affirmative of a negative attribute.

The same persons sometimes prove, again, that negative reasonings are sometimes conclusive, by these conclusives : *John is not rational, therefore he is not a man. No animal sees, therefore no man sees.* But they ought to consider that these examples are only enthymemes, and that no enthymeme is conclusive, save in virtue of a proposition understood, which, consequently, ought to be in the mind, though it be not expressed. Now, in both these examples, the proposition understood is necessarily affirmative. In the first, this—*all man is rational, John is not rational, therefore John is not a man;* and on the other—*every man is an animal, no animal sees, therefore no man sees.* Now, we cannot say that these syllogisms are purely negative, and, consequently, the enthymemes, which are conclusive only because they contain these syllogisms complete in the mind of him who uses them, cannot be brought as examples to show that there are some purely negative reasonings which afford valid conclusions.

CHAPTER X.

A GENERAL PRINCIPLE, BY WHICH, WITHOUT ANY REDUCTION TO FIGURES AND MODES, WE MAY JUDGE OF THE EXCELLENCE OR DEFECT OF ANY SYLLOGISM.

WE have seen how we may judge whether complex arguments are conclusive or vicious, by reducing them to the form of more common reasonings, in order, then, to judge of them by the common rules. But as it does not appear that our minds need this reduction in order to make this judgment, we were led to think that there must be rules more general on which these common ones themselves were founded, by which we might recognise more easily the excellencies or defects of all kinds of syllogisms, and the following is what has occurred to us in relation to this matter. When we wish to prove a proposition, the truth of which is not evident, it appears that all we have to do is to find a proposition, better known, which confirms the other, which, for this reason, may be called the proposition *containing*. But since it cannot contain it expressly in the same terms, because, if it did, it would not differ from the other, and thus be of no service in making it clearer, it is necessary there should be yet another proposition which may show that that which we called *containing*, does, in reality, contain what we wish to prove, and this one may be called *applicative*.

In affirmative syllogisms, it is often indifferent which of the two is called *containing*, since they both in some sort, contain the conclusion, and each serves to show that the other contains it.

For example, if I doubt whether a vicious man is unhappy, and reason thus—

Every one who is the slave of his passions is unhappy;
Every vicious man is the slave of his passions;
Therefore every vicious man is unhappy.

Whichever proposition you take, you may say that it contains the conclusion, and that the other shows it; for the major contains it, since *slave of his passions* contains under it *vicious*, that is to say, that vicious is contained under its extension, and is one of its subjects, as the minor shows; and the minor contains it also, since *slave of his passions*, comprehends in its idea that of *unhappy*, as the major shows.

Nevertheless, as the major is almost always the more general, it is commonly regarded as the proposition *containing*, and the minor as the proposition *applicative*.

In relation to negative syllogisms, as there is only one negative proposition, and as the negation is properly contained in the negation alone, it appears that we ought always to take the negative proposition as the *containing*, and the affirmative as the *applicative* exclusively, whether the negative be the major, as in *Celarent*, *Ferio*, *Cesare*, *Festino*, or whether it be the minor, as in *Camestres* and *Baroco*.

For if I prove by this argument that no miser is happy:

Every happy man is content;
No miser is content;
Therefore no miser is happy;

it is more natural to say, that the minor, which is negative, contains the conclusion, which is also negative, and that the major serves the purpose of showing that it contains it. For this minor, *no miser is content*, separating, totally *miser* from *content*, separates from it also *happy*, since, according to the major, *happy* is contained in the whole extension of *content*.

It is not difficult to prove that all the rules which we have given serve only to show that the conclusion is contained in one of the first propositions, and that the other shows this; and that arguments are vicious only when we fail to observe this; that they are always good when it is observed, for all these rules may be reduced to two principles, which are the foundations of the others: one, that *no term can be more general in the conclusion than in the premises*. Now this clearly depends on the general principle that the premises ought to contain the conclusion, which could not be, if the same term, being in the premises and in the con-

clusion, had less extension in the premises than in the conclusion, for the less general does not contain the more general,—*some man* does not contain *all men.*

The other general rule is, *that the middle term ought to be taken at least once universally,* which depends again on this principle, that the conclusion ought to be contained in the premises. For, supposing we wished to prove *that some friend of God is poor,* and were to employ, for this purpose, this proposition, *some saint is poor,* I say that we shall never be able clearly to see that this proposition contains the conclusion, except by another proposition in which the middle proposition, which is *saint,* is taken universally, for it is clear that in order that this proposition, *some saints are poor,* may contain the conclusion, *some friend of God is poor,* it is both necessary and sufficient that the term *some saint,* contain the term, *some friend of God,* since, in relation to the other, they have it in common. Now, a particular term is of no determinate extent, and it contains certainly only that which is involved in its comprehension and idea.

And consequently, in order that the term, *some saint,* may contain the term, *some friend of God,* it is necessary that friend of God be contained in the comprehension of the idea of saint.

Now, all that is contained in the comprehension of an idea, may be universally affirmed of it: all that is contained in the comprehension of the idea of *triangle* may be affirmed of *every triangle;* all that is contained in the idea *man,* may be affirmed of every man; and consequently, in order that *friend of God,* may be contained in the idea of *saint,* it is necessary that *every saint be the friend of God,* whence it follows that this conclusion, *some friend of God is poor,* can be contained in this proposition, *some saint is poor* (where the middle term, *saint,* is taken particularly), only in virtue of a proposition in which it is taken universally, since it must be shown that *friend of God* is contained in the comprehension of the idea *saint,* which can only be shown by affirming *saint of God.* Taken universally, *every saint is a friend of God,* and consequently none of the premises will contain the conclusion, when the middle term is taken particularly in one of the propositions, unless it be taken universally in the other.—Q. E. D.

CHAPTER XI.

APPLICATION OF THIS GENERAL PRINCIPLE TO MANY SYLLOGISMS WHICH APPEAR TO BE INVOLVED.

KNOWING, therefore, by what has been already said in the Second Part, what is meant by the comprehension and extension of terms, by which we may determine when one proposition contains, or does not contain another, we may judge of the excellency or defect of every syllogism without considering whether it is simple or compound, complex or incomplex, without paying any attention to figures or moods, exclusively by this general principle, *That one of the two propositions must contain the conclusion, and the other show that it contains it.* This will be better comprehended by some examples.

EXAMPLE 1.

I am in doubt whether this reasoning be good,—

The duty of a Christian is not to praise those who commit criminal actions;
Now those who engage in a duel commit a criminal action;
Therefore it is the duty of a Christian not to praise those who engage in duels.

Now, I need not trouble myself as to the figure or mood to which this may be reduced. It is sufficient for me to consider whether the conclusion is contained in one of the two first propositions, and if the other shows it, and I find at once that the first having nothing different from the conclusion, except that in the one, *those who commit criminal actions*, and in the other, *those who engage in duels*, that in which there is *commit criminal actions*, will contain that in which there is *engage in a duel*, provided that *committing criminal actions* contains *engaging in duels*.

Now it is clear by the sense that the term *those who commit criminal actions*, is taken universally, and that it

extends to all those who commit any such actions whatever; and thus the minor, *those who engage in a duel commit a criminal action*, showing that to *engage in a duel* is contained under this term, *commit criminal actions*, shows also that the first proposition contains the conclusion.

EXAMPLE 2.

I doubt whether this reasoning be good,—

The gospel promises salvation to Christians;
Some wicked men are Christians;
Therefore the gospel promises salvation to wicked men.

In order to determine this, I need only consider that the major cannot contain the conclusion unless the word *Christians* be taken generally for *all Christians*, and not for some Christians only. For if the gospel promises salvation only to some Christians, it does not follow that it promises it to wicked men, who may be Christians, since these wicked men may not be among the number of those Christians to whom the gospel promises salvation. Hence this reasoning is sufficiently conclusive (but the major is false), if the word *Christians* be taken in the major for *all Christians*, and it is not conclusive if it be taken for some Christians only, for then the first proposition will not contain the conclusion.

But in order to determine whether it was taken universally, we must judge it by another rule, which is given in the Second Part, viz., *Except in relation to facts, that of which we affirm is taken universally when it is expressed indefinitely.* Now, although *those who commit criminal actions*, in the first example, and *Christians*, in the second, form part of an attribute, they nevertheless take the place of subject in relation to another part of the same attribute. For it is of them that we affirm, in the one case, that we ought not *to praise them*, and in the other, that salvation is *promised to them.* And, consequently, not being restricted, they ought to be taken universally, and thus both arguments are good in form; but the major of the second is false, unless we understand by the word Christian, those who live conformably to the gospel, in which case the minor will be false, since there are no wicked men who live conformably to the gospel.

EXAMPLE 3.

It is easy to see, by the same principle, that this reasoning is worth nothing,—

The divine law commands us to obey secular magistrates;
Bishops are not secular magistrates;
Therefore the divine law does not command us to obey bishops.

For neither of the first propositions is contained in the conclusion, since it does not follow that because the divine law does not command one thing it has not commanded another; and thus the minor shows well enough that *bishops* are not comprised under the term *secular magistrates*, and that the commandment to honour secular magistrates does not include bishops. But the major does not say that God has made no other commandments besides this, as it ought to do in order to guarantee the conclusion in virtue of this minor. This is the case in the following argument, and renders it valid:—

EXAMPLE 4.

Christianity obliges servants to obey their masters in those things only which are not contrary to the law of God;
Now, unlawful traffic is contrary to the law of God;
Therefore Christianity does not oblige servants to obey their masters in an unlawful business.

For the major contains the conclusion, since the minor, *unlawful traffic*, is comprised in the number of things which are contrary to the law of God, and the major being exclusive, it is as though we said, *The divine law does not oblige servants to obey their masters in anything that is contrary to the law of God.*

EXAMPLE 5.

We may, by this same principle, easily refute the following common sophism:—

He who says that you are an animal speaks truly;
He who says that you are a goose, says that you are an animal;
Therefore he who says that you are a goose speaks truly.

For it is enough to say that neither of the two first propositions contain the conclusion; for if the major contained it (differing from the conclusion only in this, that there is *animal* in the major, and *goose* in the conclusion), *animal* must contain *goose;* but *animal* is taken particularly in this major, since it is the attribute of this affirmative incidental proposition, *you are an animal,* and consequently, it could contain *goose* only in its comprehension: to show which, the word *animal* must be taken universally in the minor by affirming *goose* of every animal, which cannot be done, and is not either, since animal is again taken particularly in the minor, being there, as well as in the major, the attribute of this incidental proposition, *you are an animal.*

EXAMPLE 6.

By this, too, we may refute that ancient sophism referred to by St Augustine:—

You are not what I am;
I am a man;
Therefore you are not a man.

This argument is unsound by the rules of the figures—since it is of the first,—and the first proposition, which is its minor, is negative. But is enough to say that the conclusion is not contained in the first of these propositions, and the other proposition, *I am a man,* does not show that it is contained in it. For the conclusion being negative, the term *man* is there taken universally, and thus is not contained in the term *what I am,* since he who speaks is not *every man,* but only *some man,* as appears from his saying, in the applicative proposition, *I am a man,* in which the term *man* is restricted to a partial signification, since it is the attribute of an affirmative proposition; now the general is not contained in the particular.

CHAPTER XII.

OF CONJUNCTIVE SYLLOGISMS.

ALL syllogisms are not conjunctive whose propositions are conjunctive or compound, but those only whose major is so compounded that it contains the whole of the conclusion. These may be reduced to three kinds—*conditional*, *disjunctive*, and *copulative*.

OF CONDITIONAL SYLLOGISMS.

Conditional syllogisms are those in which the major is a conditional proposition which contains all the conclusion: as,—

If there is a God, he ought to be loved;
Now there is a God;
Therefore he ought to be loved.

The major has two parts: first, the antecedent, *if there be a God;* second, the consequent, *he ought to be loved.*

This syllogism may be of two kinds, since from the same major we may form two conclusions.

The first is, when, having affirmed the consequent in the major, we affirm the antecedent in the minor, according to this rule—*In positing the antecedent, we posit the consequent:*—

If matter cannot move of itself, its first motion must have been given to it by God;
Now matter cannot move of itself;
Its first movement must therefore have been given to it by God.

The second kind is, when we take away the consequent, in order to take away the antecedent, according to this rule—*In taking away the consequent, we take away the antecedent:*—

If any of the elect perish, God is deceived;
But God is not deceived;
Therefore none of the elect perish.

This is the reasoning of St Augustine: *Horum si quisquam perit, fallitur Deus; sed nemo eorum perit, quia non fallitur Deus.*

Conditional arguments are vicious in two ways.

The one is, when the major is an irrational condition, of which the consequent is contrary to the rules: as if I conclude the general from the particular in saying, If we deceive ourselves in anything, we deceive ourselves in all things.

But this falsehood in the major of these syllogisms regards rather the matter than the form; thus we consider them as vicious in relation to the form, when the conclusion is wrongly deduced from the major, whether it be true or false, reasonable or unreasonable; which is done in two ways:

First, when we infer the antecedent from the consequent: as if we say—

If the Chinese are Mohammedans, they are infidels;
Now they are infidels;
Therefore they are Mohammedans.

The second kind of conditional arguments which are false, is when, from the negation of the antecedent, we infer the negation of the consequent: as in the same example,—

If the Chinese are Mohammedans, they are infidels;
They are not Mohammedans;
Therefore they are not infidels.

There are, however, some of these conditional arguments which appear to have this defect, which are, nevertheless very good; because there is an exclusion understood in the major, though not expressed. Example: Cicero having published a law against those who bought suffrages, and Murimus being accused of buying them, Cicero pleaded for him, justifying himself from the reproach which Cato brought against him, of acting in this defence contrary to his own law, by this argument: *Etenim si largitionem factam esse confiterer, idque recte factum esse defenderem, facerem improbe, etiam si alius legem tulisset; cum vero nihil commissum contra legem esse defendam, quid est quod meam defensionam latio legis impediat?* This argument would seem to resemble that of a blasphemer,

who should say in self-defence, *If I denied there was a God, I should be a wicked man; but although I blaspheme, I do not deny there is a God; therefore I am not a wicked sinner.* This argument proves nothing, because there are other crimes besides atheism, which render a man wicked; but that which makes Cicero's good, although Ramus has given it as an example of a bad reasoning, is, that it contains in sense a particle exclusive, and may be reduced to these terms:—

I could only be reasonably reproached with acting contrary to my law, if I maintained that Murinus bought the votes, and nevertheless justified his action; but I maintain that he did not buy the votes—consequently I do nothing opposed to my law.

The same may be said of this reasoning of Venus, in speaking to Jupiter in Virgil: —

Si sine pace tua, atque invito numine Troës
Italiam petiere, luant peccata, neque illos
Juveris auxilio: sin tot responsa secuti,
Quæ superi manesque dabant: cur nunc tua quisquam
Flectere jussa potest, aut cur nova condere fata.

For this reasoning may be reduced to these terms:—

If the Trojans have come into Italy contrary to the will of the gods, they are punishable;
But they have not come contrary to the will of the gods;
Therefore they are not punishable.

It is therefore necessary to supply something, otherwise it will resemble the following, which certainly is not conclusive:—

If Judas entered into the apostleship without being called, he ought to have been rejected by God;
But he did not enter without being called;
Therefore he ought not to be rejected by God.

But that which preserves the reasoning of Venus, in Virgil, from being vicious, is that we must consider the major as exclusive in meaning, as though it had been—

The Trojans then alone would have been punishable, and unworthy the help of the gods, if they had come into Italy contrary to their will;

Therefore, &c.

Or we may say, which is the same thing, that the

affirmative, *si sine pace tua*, &c., involved in it this negative :—

If the Trojans came into Italy only by the will of the gods, it is not just to reject them ;
Now they did come by order of the gods alone ;
Therefore, &c.

OF DISJUNCTIVE SYLLOGISMS.

Those syllogisms are called disjunctive of which the first proposition is disjunctive, that is to say, whose parts are joined together by *vel*, *or*, as the following of Cicero :—

Those who have slain Cæsar are paricides, or defenders of liberty ;
Now they are not paricides ;
Therefore they are defenders of liberty.

There are two kinds of these,—the first when we take away one part in order to preserve the other, as in that which we have given, or the following :—

All wicked men must be punished, either in this world or in another ;
Now there are some wicked men who are not punished in this world ;
Therefore they will be in another.

There are sometimes three members in this sort of syllogism, and then we take away two in order to keep one, as in this argument of St Augustine, in his Book on Lying (chap. 8): *Aut non est credendum bonis, aut credendum est eis quos credimus debere aliquando mentiri, aut non est credendum bonis aliquando mentiri. Horum primum perniciosum est; secundum stultum ; restat ergo, ut nunquam mentiantur boni.*

The second, but less natural kind, is when we take one of the parts, in order to take away the other, as if we say :—

Saint Bernard, affirming that God had confirmed, by miracles, his preaching the crusade, was either a saint or an impostor ;
Now, he was a saint ;
Therefore he was not an impostor.

These disjunctive syllogisms are rarely false, except through the falsity of a major, through which the division

is not exact, leaving a mean between the opposed members: as if I were to say—

We must either obey princes when they command those things which are contrary to the law of God, or rise against them;

Now, we must not obey them when they command things contrary to the law of God;

Therefore we must rise against them.

Or, *Now we must not rise up against them;*

Therefore we must obey them in that which is contrary to the law of God.

Both reasonings are false, because there is a mean in this disjunction, which was observed by the first Christians, who patiently suffered all things rather than do anything contrary to the law of God, without, however, rising in revolt against princes.

These false disjunctions are one of the most common sources of false reasonings among men.

OF COPULATIVE SYLLOGISMS.

These syllogisms are of one sort only, which is, when we take a copulative proposition, which denies, and then establish one part, in order to take away the other.

A man cannot be, at the same time, a servant of God and a worshipper of money;

Now a miser is a worshipper of money;

Therefore he is not a servant of God.

But such a syllogism does not conclude necessarily when we take away one part in order to posit the other, as may be seen by the following reasoning derived from the same propositions:—

A man cannot be, at the same time, a servant of God and a worshipper of money;

Now, prodigals are not worshippers of money;

Therefore they are servants of God.

CHAPTER XIII.

OF SYLLOGISMS WHOSE CONCLUSION IS CONDITIONAL.

We have seen that a proper syllogism cannot have less than three propositions. But this is true only when we obtain a conclusion absolutely, and not when we obtain it conditionally, because then the conditional proposition alone may contain one of the premises, besides the conclusion, and even both.

Example.—If I wish to prove that the moon is an uneven body, and not polished like a mirror, as Aristotle believed, I cannot conclude this absolutely, except in three propositions:—

Every body which reflects the light from all its parts is uneven;
Now the moon reflects the light from all its parts;
Therefore the moon is an uneven body.

But I need only two propositions, in order to conclude conditionally in this way:

Every body which reflects light from all its parts is uneven;
Therefore, if the moon reflects the light from all its parts, it is an uneven body.

And I may even include this reasoning in a single proposition, thus:—

If every body which reflects light from all its parts is uneven, and the moon reflects light from all its parts, it must be confessed that it is not a polished body, but uneven.

Or, equally in connecting one of the propositions by the causal particle *because*, or *since*—*If every true friend ought to be ready to give his life for his friend—there are few true friends, since there are few who are friends to this extent.*

This way of reasoning is very common and very good, and hence we are not to imagine there is no reasoning, except when we see three propositions separated and ar-

ranged as in the schools, for it is certain that single proposition comprehends this entire syllogism—

Every true friend ought to be ready to give his life for his friend;

Now there are few people who are ready to give their lives for their friends;

Therefore there are few true friends.

All the difference between these absolute syllogisms, and those in which the conclusion is contained with one of the premises in a conditional proposition, is that the first cannot be conceded entirely, except we agree to that of which it endeavours to persuade us, whereas, in the last, we may concede everything, without the proposer having gained anything thereby, since it remains with him to prove that the condition on which the consequence which was conceded to him rests, is true.

And thus these reasonings are, properly, only preparatory to an absolute conclusion, but they are, nevertheless, very suitable for this purpose; and are, it must also be confessed, very common and natural, while they have this advantage, that being further removed from the manner of the schools, they are, on this account, better received in the world.

We may obtain a conclusion, in this way, in all the figures, and through all the moods; and thus there are no other rules to be observed but the rules of the figures themselves. It is only necessary to remark, that the conditional conclusion always comprehends *one of the premises besides the conclusion.* This is sometimes the major and sometimes the minor. This will appear from the examples of many conditional propositions, which may be obtained from two general maxims, the one affirmative, and the other negative, whether the affirmation be already proved, or conceded without proof.

Every feeling of pain is a thought. From this we may conclude

AFFIRMATIVELY,

1. *Therefore, if all brutes feel pain,*
All brutes think.—Barbara.

2. *Therefore, if some plant feels pain,*
Some plant thinks.—Darii.
3. *Therefore, if all thought is an action of the mind,*
All feeling of pain is an action of the mind.—Barbara.
4. *Therefore, if all feeling of pain is an evil,*
Some thought is an evil.—Darapti.
5. *Therefore, if the feeling of pain is in the hand which is burnt,*
There is some thought in the hand which is burnt—Disamis.

NEGATIVELY,

6. *Therefore, if there is no thought in the body,*
No feeling of pain is in the body.—Celarent.
7. *Therefore, if no beast thinks,*
No beast feels pain.—Camestres.
8. *Therefore, if some part of man does not think,*
Some part of man does not feel pain.—Baroco.
9. *Therefore, if no movement of matter is a thought,*
No feeling of pain is a movement of matter.—Cesare.
10. *Therefore, if the feeling of pain is not agreeable,*
Some thought is not agreeable.—Felapton.
11. *Therefore, if some feeling of pain is not voluntary,*
Some thought is not voluntary.—Bocardo.

We may still obtain some other conditional conclusions from this general maxim, *Every feeling of pain is a thought;* but as these are not very natural, they are not worth enumerating.

Of those which we have given, there are some which comprise the minor in addition to the conclusion,—to wit, 1st, 2d, 7th, 8th; and others, the major,—to wit, the 3d, 4th, 5th, 6th, 9th, 10th, and 11th.

We may, in the same way, notice the different conditional conclusions which may be derived from a general negative proposition, such, for example, as *No matter thinks.*

1. *Therefore, if all the souls of the brutes are matter,*
No soul of a brute thinks.—Celarent.
2. *Therefore, if some part of man is matter,*
Some part of man does not think.—Ferio.

3. *Therefore, if our soul thinks,*
Our soul is not matter.—Cesare.
4. *Therefore, if some part of man thinks,*
Some part of man is not matter.—Festino.
5. *Therefore, if every thing that feels pain thinks,*
No matter feels pain.—Camestres.
6. *Therefore, if all matter is a substance,*
Some substance does not think.—Felapton.
7. *Therefore, if some matter is the cause of many effects which appear very marvellous,*
Everything which is the cause of marvellous effects does not think.—Ferison.

Of these conditionals there are only five which contain the major in addition to the conclusion; all the others contain the minor.

The greatest use of these kinds of reasoning is to compel him with whom we are discussing to recognise, in the first place, the validity of a consequence which he may allow, without pledging himself to anything further, because it is proposed to him only conditionally, and separated from the true matter, so to speak, which it contains. And hence, he is disposed to receive more easily the absolute conclusion which is derived from it, either by positing the antecedent, in order to posit the consequent, or by taking away the consequent, in order to take away the antecedent.

Thus, a man having granted me that *No matter thinks*, I may conclude from it, *Therefore, if the soul of brutes thinks, it must be distinct from matter.* And as he cannot deny me this conditional conclusion, I may obtain from it one or other of these two absolute consequences:—

Now the soul of brutes thinks;
Therefore it is distinct from matter.

Or equally well on the contrary—

Now the soul of brutes is not distinct from matter;
Therefore it does not think.

Hence we see that four propositions are necessary, in order to make these kinds of reasonings complete, and to make them establish anything absolutely. We must not, however, place them in the rank of syllogisms which

are called compound, because these four propositions contain nothing more in sense than these three propositions of a common syllogism :—

No matter thinks;
Every soul of a brute is matter;
Therefore no soul of a brute thinks.

CHAPTER XIV.

OF ENTHYMEMES AND OF ENTHYMEMATIC SENTENCES.

We have already said that an enthymeme is a syllogism perfect in the mind, but imperfect in the expression, since some one of the propositions is suppressed as too clear and too well known, and as being easily supplied by the mind of those to whom we speak. This way of reasoning is so common in conversation and in writing, that it is rare, on the contrary, to express all the propositions, since there is, commonly, one of them clear enough to be understood, and since the nature of the human mind is rather to prefer that something be left it to supply, than to have it thought that it needs to be taught everything.

Thus this suppression flatters the vanity of those to whom we speak, in leaving something to their intelligence, and, by abbreviating conversation, renders it more lively and effective. It is certain, for example, that if, of this verse from the Medea of Ovid, which contains a very elegant enthymeme :—

Servare potui perdere an possim rogas.

I am able to save, therefore, I am able to destroy thee, we were to make a formal argument in this way :—

He who is able to save is able to destroy ;
Now, I am able to save thee ;
Therefore, I am able to destroy thee.

All the grace would be taken away from it; the reason of this is, that as one of the principal beauties of discourse is to be full of meaning, and to furnish occasion to the mind of forming a thought more extensive than what is expressed, so it is, on the contrary, one of its greatest defects, to be void of sense, and to contain few thoughts, which is almost inevitable in philosophic syllogisms; for, the mind going faster than the words, and one of the propositions being sufficient to enable it to conceive two, the expression of the second becomes useless, containing, as it does, no new sense. This is what renders these kind of arguments so rare in ordinary life, since, without reflection even, we lay aside that which wearies us, and confine ourselves to that which is actually necessary to make our meaning understood.

Enthymemes are, therefore, the ordinary way in which men express their reasonings, by suppressing the proposition which they judge will be readily supplied; and this proposition is sometimes the major, sometimes the minor, and often the conclusion, although, in this last case, it is not properly called enthymeme, the whole argument being, in some sort, contained in the two first propositions.

It happens, also, sometimes, that we include the two propositions of an enthymeme in a single proposition, which Aristotle calls, for this reason, an enthymematic sentence, and of which he furnishes the following example:—

Ἀθάνατον, ὄργην μὴ φύλαττε θνητὸς ὤν,—

Mortal, cherish not immortal hatred.

The entire argument would be—

He who is mortal ought not to cherish an immortal hatred;
Now, you are mortal;
Therefore, &c.

And the perfect enthymeme would be—

You are mortal, let not your hatred, therefore, be immortal.

CHAPTER XV.

OF SYLLOGISMS COMPOSED OF MORE THAN THREE PROPOSITIONS.

We have already said that syllogisms composed of more than three propositions are generally called *Sorites*. Of these we may distinguish three kinds:—

1. *Gradation*, of which it is not necessary to say more than what has been said in the First Chapter of this Third Part.

2. *Dilemma*, of which we shall treat in the following Chapter.

3. That which the Greeks have called *Epichirema* (ἐπιχείρημα), which comprises the proof, either of one of the two first propositions, or both; and of this we shall speak in this Chapter.

As we are often obliged to suppress certain propositions as too evident, it is often, also, necessary when we advance doubtful ones, to connect, at the same time, the proofs with them, in order to restrain the impatience of those to whom we speak, who are often indignant when we attempt to persuade them by reasons which appear to them false or doubtful; for, although there be a remedy in the end, it is, nevertheless, dangerous to produce, even for a short time, that disgust in their minds; and, then, it is much better that these proofs should follow the doubtful propositions immediately, than that they should be separated from them. That separation produces another inconvenience very troublesome, which is, that we are obliged to repeat the proposition which we wish to prove. Hence, instead of the method of the schools—which is, to propose the whole argument, and then to prove the proposition which may present a difficulty—that which is followed in ordinary discourse is, to join to the doubtful proposition the proofs which establish them, which makes a kind of argument composed of many propositions; for to the major are joined the

proofs of the major, to the minor the proofs of the minor, and then the conclusion is drawn.

We may thus reduce the whole oration for Milo to a compound argument, of which the major is—that it is lawful to slay one who lies in wait for us. The proofs of this major are derived from the law of nature, the laws of nations, and from examples. The minor is—that Clodius had lain in wait for Milo; and the proofs of the minor are, the equipage of Clodius, his train, &c. The conclusion is,—that therefore, it was lawful for Milo to slay him.

Original sin might be proved by the miseries of children, according to the dialectic method, in this way :—

Children can only be miserable as the penalty of some sin which they derive from their birth; now they are miserable; therefore, the cause of this is original sin. Then it would be necessary to prove the major and the minor; the major by this disjunctive argument—the misery of children can only spring from one of the four following causes :—1st, Sins committed previously in another life; 2d, The weakness of God, who has not the power to preserve them from it; 3d, The injustice of God, who inflicts it upon them without cause; 4th, Original sin. Now, it is impious to say that it springs from the three first causes; the fourth, therefore, alone remains, which is original sin.

The minor, *that children are miserable*, is proved by enumerating their miseries.

But it is easy to see with how much more of beauty and of power St Augustine has set forth this proof, by comprehending it in a compound argument, in the following manner:—"Consider the number and the greatness of the evils under which children labour, and how the first years of their life are full of vanity, of afflictions, of illusions, of fears; then, when they grow up, and when they begin even to serve God, error tempts, in order to seduce them; labour and pain to weaken them; lust to inflame them; sorrow to cast them down; pride to lift them up; and who can represent, in a few words, all the various afflictions which weigh down the yoke of the children of Adam? The evidence of these miseries compelled pagan philosophers, who knew and believed nothing about the sin of our first father, to say that we were born only to

suffer the chastisement which we had merited, by crimes committed in another life, and that thus our minds had been attached to corruptible bodies, as a punishment of the same nature with that which the Tuscan tyrants inflicted on those whom they bound, while alive, to dead bodies. But this opinion, that our minds are joined to bodies as a punishment for sins previously committed in another life, is rejected by the apostle. What, therefore, remains but that the cause of these appalling evils be either the injustice or impotency of God, or the penalty of the first sin of man? But, since God is neither unjust nor impotent, there only remains that which you are unwilling to acknowledge, but which you must acknowledge in spite of yourselves—that the yoke, so heavy, which the children of Adam are obliged to bear, from the time in which their bodies are taken from their mother's womb till the day when they return to the womb of their common mother, the earth, would never have been, had they not deserved it through the guilt which they derive from their original."

CHAPTER XVI.

OF DILEMMAS.

We may define a dilemma to be *a compound reasoning, in which, after having divided a whole into its parts, we conclude affirmatively or negatively of the whole, what we had concluded of each part.*

I say, what we had *concluded* of each part, and not simply what we had *affirmed* of it; for that alone is truly a dilemma, where what we say of each part is supported by its special reason.

For example, having to prove *that we cannot be happy in this world*, we may do it by this dilemma:—

We can only be happy in this world by abandoning ourselves to our passions, or by combating them;

If we abandon ourselves to them, this is an unhappy state, since it is disgraceful, and we could never be content with it;

If we combat them, this is also an unhappy state, since there is nothing more painful than that inward war which we are continually obliged to carry on with ourselves;

We cannot, therefore, have in this life true happiness.

If we wish to prove, that bishops who do not labour for the salvation of the souls committed to their care, are without excuse before God, we may do so by a dilemma:—

Either they are capable of that office, or they are incapable;

If they are capable, they are without excuse for not fulfilling it;

If they are incapable, they are without excuse for having undertaken an office so important, when they were unable to perform its duties;

And consequently, however this may be, they are without excuse before God, if they do not labour for the salvation of the souls committed to their care.

But other observations may be made on these kinds of reasonings:—

The *first* is, that we do not always express all the propositions which enter into them. For example, the dilemma we are about to give is contained in these few words of a speech of St Charles on entering one of the provincial councils, *Si tanto muneri impares, cur tam ambitiosi; si pares, cur tam negligentes.*

Thus, also, there are many things understood in that celebrated dilemma, by which an ancient philosopher proved that we ought not to meddle with the affairs of the republic:—

If we manage them well, we shall offend men;

If we manage them ill, we shall offend the gods;

Therefore we ought not to engage in them.

Of the same kind is that by which another proved that it was best not to marry:—

If the wife you espouse be beautiful, she excites jealousy;
If she be ugly, she disgusts;
Therefore it is best not to marry.

For in both these dilemmas the proposition which should contain the separation is understood; and this is very common, since it is easily understood, being sufficiently indicated by the particular propositions in which each part is treated of.

And, moreover, in order that the conclusion be contained in the premises, it is always necessary to understand something general, which may belong to the whole, as in the first example:—

If we manage them well, we offend men, which is injurious;
If we manage them ill, we offend the gods, which is also injurious;
Therefore, it is injurious in every way to engage in the affairs of the republic.

This caution is very important in order to judge well of the force of a dilemma. For that, for example, which renders the one above inconclusive is, that it is not injurious to offend men, since we must only avoid offending God.

The *second* observation is, that a dilemma may be vicious, principally through two defects.

One, when the disjunctive on which it is founded is defective, as not comprehending all the members of the whole which we divide.

Thus the dilemma against marrying is not conclusive, since there may be wives which are not so beautiful as to awaken jealousy, or so ugly as to disgust.

For the same reason, that dilemma is very false which the ancient philosophers employed against the fear of death. *Either our soul*, said they, *perishes with the body, and thus, having no feeling, we shall be incapable of any evil; or, if the soul survives the body, it will be more happy than it was in the body; therefore death is not to be feared.* For, as Montaigne has very wisely remarked, it was great blindness not to see that there might be conceived between these a third state, which is, that the soul, surviving the body, will find itself in a state of torment and misery,

which would give us just ground of apprehension in relation to death, from the fear of falling into that state.

Another defect which renders dilemmas inconclusive, emerges when the particular conclusions of each part are not necessary. Thus, it is not necessary that a beautiful wife should occasion jealousy, because she may be so wise and virtuous that there is no room to doubt of her fidelity. It is not necessary, either, that, being ugly, she should displease her husband, since she may have other qualities of mind and of character, so valuable that she cannot but please him.

The *third* observation is, that he who employs a dilemma must take care that it may not be turned against himself. Thus Aristotle testifies, that the dilemma by which the philosopher endeavoured to prove that one ought not to engage in state affairs, was turned upon himself, thus:—

If we govern according to the corrupt rules of men, we shall please them;
If we maintain true justice, we shall please the gods;
Therefore we ought to engage in them.

This retort, however, was not wise; for it is not advantageous to please men by offending God.

CHAPTER XVII.

PLACES, OR THE METHOD OF FINDING ARGUMENTS.—THAT THIS METHOD IS OF LITTLE USE.

WHAT the rhetoricians and logicians call *places*, *loci argumentorum*, are certain general heads, to which may be reduced all the proofs which we employ in the various matters of which we treat; and the part of logic which is termed *invention*, is nothing else than that which teaches of these places.

Ramus quarrelled on this subject with Aristotle, and with the philosophers of the schools, because they treated of places after having given the rules of arguments, and he maintained against them that it was necessary to explain the places, and what pertains to invention, before treating of these rules.

The reason Ramus assigns for this is, that we must have the matter found, before we can think of arranging it.

Now the exposition of places teaches us to find this matter, whereas the rules of argument can only teach us to arrange it.

But this reason is very feeble, for although it be necessary for the matter to be found, in order to its arrangement, it is, nevertheless, not necessary that we should learn how to find the matter before having learnt how to dispose of it. For, in order to learn how to dispose of the matter, it is enough to have some general matter, as examples; but the mind and common sense always furnish enough of these, without its being needful to borrow them from any art or method. It is, therefore, true that it is necessary to have some matter, in order to apply the rules of argument: but it is not true that it is necessary to find that matter by the method of places.

We might say, on the contrary, that since we undertake to teach, in the places, the art of finding arguments and syllogisms, it is necessary to know beforehand, what is an argument, and what a syllogism. But it might, perhaps, be replied, in like manner, that nature alone furnishes us with a general knowledge of what reasoning is, which is sufficient to enable us to understand what is said of it in the places.

It is, therefore, of no service to trouble ourselves about the order in which places should be treated of, since it is a matter of very little consequence. But it may, perhaps, be more useful to inquire, whether it will not be more to the purpose not to treat of them at all.

We know that the ancients made a great mystery of this method, and that Cicero preferred it to all dialectic, as it was taught by the Stoics, since they did not speak of places at all. Let us leave, says he, all that science which tells us nothing about the art of finding arguments, and which is

only too prolix in teaching us to judge of them. *Istam artem totam relinquamus quæ in excogitandis argumentis muta nimium est, in judicandis nimium loquax.* Quintilian, and all the other rhetoricians,—Aristotle, and all the philosophers—speak of it in the same way, so that we could hardly differ from their opinion, if general experience did not appear entirely opposed to it.

We may adduce, as evidence of this, almost as many persons as have passed through the ordinary course of study, and who have learned, by this artificial method, to find out the proofs which are taught in the colleges. For is there any one of them who could say truly, that when he has been obliged to discuss any subject, he has reflected on these places, and has sought there the reasons which were necessary for his purpose? Consult all the advocates and preachers which are in the world, all who speak and write, and who always have matter enough, and I question if one could be found who had ever thought of making an argument *a causa, ab effectû, ab adjunctis*, in order to prove that which he wished to establish.

And although Quintilian seems to have held this art in much esteem, he is, nevertheless, obliged to confess that we need not, when we treat of any matter, go knocking at the door of all these places, in order to obtain arguments and proofs. "*Illud quoque*," says he, "*studiosi eloquentiæ cogitent non esse cùm proposita fuerit materia dicendi scrutanda singula et velut ostiatim pulsanda, ut sciant an ad id probandum quod intendimus, fortè respondeant.*"

It is true that all the arguments which we make on any subject may be reduced to those heads, and to those general terms, which we call places; but it is not by this method that we prove them. Nature, the attentive consideration of the subject, the knowledge of different truths, enable us to furnish these, and then art connects these in certain ways, so that we may say truly of places what St Augustine said in general of the precepts of rhetoric. "We find," says he, "that the rules of eloquence are observed in the speeches of eloquent persons, although they never think of these in making them, whether they know them, or are ignorant of them. They practise these rules because they are eloquent, but they do not adhere to them

in order to be eloquent. *Implent quippe illa quia sunt eloquentes, non adhibent ut sint eloquentes.*

We walk naturally, as the same father observes in another place, and in walking we make certain regular movements of the body; but it would avail nothing for the purpose of teaching us to walk, to say, for instance, that we must send the spirits to certain nerves, move certain muscles, make certain movements in the joints, put one foot before the other, and lean on one while the other advances. We may form these rules very well by observing what nature causes us to do, but we could never make those actions by the help of these rules. Thus, we treat of all these places in the most ordinary discourse, and we can say nothing that is not connected with them; but it is not by making a formal reflection on them that we produce these thoughts, such reflection will only help to damp the ardour of the mind and to prevent our finding natural and striking reasons, which are the true ornaments of every kind of discourse.

Virgil, in the Ninth Book of the Æneid, after having represented Euryalus surprised and surrounded by his enemies, who were about to revenge on him the death of their companions, which Nisus, the friend of Euryalus, had slain, puts these words, full of passionate emotion, in the mouth of Nisus:—

> Me, me adsum, qui feci; in me convertite ferrum,
> O Rutuli! mea fraus omnis: nihil iste nec ausus,
> Nec potuit. Cœlum hoc, et sidera conscia testor.
> Tantum infelicem nimium dilexit amicum.

"This is an argument," says Ramus, "*a causa efficiente*, but we may judge with certainty, that Virgil, when he wrote these verses, never dreamt of the place of efficient cause. He would never have made them had he stopped to search out that place; and it was necessary for him, in order to produce such noble and spirited verses, not only to forget these rules, if he knew them, but, in some sort, also to forget himself, in order to realise the passion which he portrayed."

The little use which has been made of this method of places during the whole time that it has been discovered and taught in the schools, is a manifest proof that it is of

no great service; but when we apply ourselves to obtain all the good which may be derived from it, we see that we cannot gain anything which is truly useful and valuable, for all that can be accomplished by this method, is to discover, on every subject, different thoughts, general, ordinary, remote, such as the Lullists find by means of their tables. Now, so far is it from being useful to obtain this sort of abundance, that there is nothing which more depraves the judgment, nothing which more chokes up good seed, than a crowd of noxious weeds; nothing renders a mind more barren of just and weighty thoughts than this noxious fertility of common thoughts. The mind is accustomed to this facility, and no longer makes any effort to find appropriate, special, and natural reasons, which can only be discovered by an attentive consideration of the subject.

We ought to consider, then, that the abundance which is sought after by means of these places is an exceedingly small advantage; it is not wanted by a greater part of the world. We sin much more by excess than by defect, and our discourses are only too full of matter. Thus, in order to produce in men a wise and solid eloquence, it would be much more useful to teach them to be silent than to speak, that is to say, to repress and to cut off the low, common, and false thoughts, than to give them forth as they arise—a confused mass of reasonings, good and bad, with which books and discourses are filled.

And since the use of places hardly avails for anything, save for the finding of these kinds of thoughts, we may say, that if it is right to know what is said of them, since so many celebrated men have spoken of them that there has arisen a kind of necessity to know in general so common a thing, it is far more important to be thoroughly persuaded that there is nothing more ridiculous than to employ them, in talking about everything, to no purpose, as the Lullists do by means of their general attributes, which are kinds of places; and that that fatal facility of talking about everything, and of finding a reason for everything, of which some are vain, is so wretched a characteristic of mind, that it is far below stupidity.

Hence the whole advantage which can be derived from these places is reduced rather to the general effect which

they produce; which may, perhaps, be of some service without our knowing it, in enabling us to recognise at once, in the subject of which we treat, more of its phases and parts.

CHAPTER XVIII.

DIVISION OF PLACES INTO THOSE OF GRAMMAR, OF LOGIC, AND OF METAPHYSICS.

THOSE who have treated of places have divided them in a different way. That which is followed by Cicero, in his Books of Invention, and in the second book of the Orator, and by Quintilian, in the fifth book of his Institutes, is less methodical, but it is also better adapted for speeches at the bar, to which these books specially relate; that of Ramus is too embarrassed with subdivisions.

The following division, which appears a very convenient one, is that of a very solid and judicious German philosopher, named Claubergius, whose Logic fell into our hands after the printing of this had been begun. The places are taken either from grammar, or from logic, or from metaphysics.

GRAMMATICAL PLACES.

The places of grammar are, etymology, and words derived from the same root, which are called in Latin *conjugata*, and in Greek *παρώνυμα*.

We argue from etymology when we say, for example, that many people in the world never divert themselves, properly speaking; because to divert oneself is to desist from serious occupation, and they are never occupied seriously.

Words derived from the same root also help in finding out thoughts:—

Homo sum; humani nil à me alienum puto.
Mortali urgemur ab hoste, mortales.
Quid tam dignum misericordia quam miser?
Quid tam indignum misericordia quam superbus miser?

What is more worthy of our compassion than a miserable man? and what is less worthy of our compassion than a miserable man who is proud?

LOGICAL PLACES.

The places of logic are the universal terms—genus, species, difference, property, accident, definition, division; but as all these points have been explained before, it is not necessary to treat of them further here.

It is only necessary to remark that there are commonly joined to these places certain general maxims, which it is well to know, not because they are of any great use, but because they are common. We have already noticed some of these under other terms, but it is well to know them under the ordinary terms:—

1. *What is affirmed or denied of the genus, is affirmed or denied of the species:*—What belongs to all men, belongs to the great; but they cannot pretend to advantages which are above humanity.

2. *In destroying the genus, the species is also destroyed:*—He who does not judge at all, cannot judge wrongly; he who does not speak at all, can never speak indiscreetly.

3. *In destroying all the species, the genus is destroyed:*—The forms which are called substantial (excepting the reasonable soul) are neither body nor spirit; therefore they are not substances.

4. *If we can affirm or deny of anything the whole difference, we may affirm or deny the species:*—Extension does not belong to thought; therefore it is not matter.

5. *If we can affirm or deny of anything the property, we may affirm or deny the species:*—Since we cannot figure to ourselves the half of a thought, or a round or square thought, it cannot be body.

6. *We may affirm or deny the thing defined, of that in re-*

lation to which we may affirm or deny the definition:—There are few just persons, since there are few who have the firm and abiding purpose of rendering to each what belongs to him.

METAPHYSICAL PLACES.

The places of metaphysics are certain general terms belonging to all beings, to which many arguments are referred,—as causes, effects, wholes, parts, opposed terms.

The definitions which are given in the schools of causes in general, in saying that *a cause is that which produces an effect*, or *that through which a thing is*, are so vague, and it is so difficult to see how they agree to all kinds of causes, that it would be much better to leave this word amongst those which are not defined, since our idea of it is as clear as the definitions.

But the division of causes into four kinds, that is, into final, efficient, material, and formal, is so celebrated, that it must be known.

The FINAL CAUSE is the end for which a thing is.

There are *principal* ends—those, to wit, which are mainly regarded,—and *accessory* ends, which are only indirectly considered.

That which we undertake to do or obtain is called *finis cujus gratia*. Thus health is the end of medicine, since it undertakes to procure it.

He for whom we labour is called *finis cui*. Man is the end of medicine in this sense, since it is for him that it seeks to obtain a cure.

There is nothing more common than to derive arguments from the consideration of the end, either for the purpose of showing that a thing is imperfect, as, that a speech is a bad one, since it is not adapted to persuade; or in order to show that a man has done, or will do, some action, because it is conformed to the end which he is accustomed to propose to himself: whence came that celebrated maxim of a Roman judge, that we ought to inquire before all things else, *Cui bono?* that is to say, what interest a man would have in doing such a thing, since men commonly

act according to their interest; or to show, on the contrary, that we ought not to suspect a man of such an action, since it would have been contrary to his purpose.

There are still many other ways of reasoning from the end, which good sense will discover better than all precepts, which is also true of the other places.

The EFFICIENT CAUSE is that which produces another thing,—we may derive arguments from it, by showing that an effect is not, since there has not been a sufficient cause, or that it is, or will be, by showing that all the causes are present. If these causes are necessary, the argument is necessary; if they are contingent and free, it is only probable.

There are different kinds of efficient causes, of which it is useful to know the names.

God, in creating Adam, was the *total* cause, since nothing had co-operated with Him; but the father and mother are each only *partial* causes, in relation to their child, since both are needed.

The sun is a *proper* cause of light, but it is only an *accidental* cause of the death of a man killed by its heat, since he was weak before.

The father is the *proximate* cause of his son.

The grandfather is only the *remote* cause.

The mother is a *producing* cause.

The nurse is only a *preserving* cause.

The father is a *universal* cause, in relation to his children, because they are of the same nature with him.

God is only an *equivocal* cause, in relation to creatures, because they are not of the divine nature.

A workman is the *principal* cause of his work; his instruments are only the *instrumental* causes.

The air which fills an organ is the *universal* cause of the harmony of the organ.

The particular disposition of each pipe, and he who plays, are the *particular* causes which determine the universal.

The sun is a *natural* cause.

Man is an *intellectual* cause, in relation to that which he does with judgment.

The fire which burns the wood is a *necessary* cause.

A man who walks is a *free* cause.

The sun shining into a room is the *proper* cause of its light; the unbarring of the window is only a cause or condition, without which the effect would not be *conditio sine qua non*.

The fire which burns a house is the *physical* cause of the conflagration; the man who set it on fire is the *moral* cause.

We may also bring under efficient cause the *exemplary* cause, which is the model according to which a work is made, as the plan by which an architect erects a building; or, in general, that which is the cause of the objective existence of an idea, or of any other image whatever: as the king, Louis XIV., is the exemplary cause of his portrait.

The MATERIAL CAUSE is that of which things are formed, as gold is the matter of which a golden vase is made; what belongs, or does not belong, to the matter, belongs, or does not belong, to the things which are composed of it.

The FORM is that which renders a thing what it is, and distinguishes it from others, whether it be a thing really distinguished from matter, according to the opinion of the schools, or simply the arrangement of its parts. It is by the knowledge of this form that we are able to explain its properties.

There are as many different effects as there are causes, these words being reciprocal. The common way of arguing from them is to show that if the effect is, the cause is, since there can be nothing without a cause. We prove, also, that a cause is good or bad, when its effects are good or bad. This, however, is not always true in accidental causes.

We have said enough of the whole and its parts in the chapter on Division, and it is not necessary, therefore, to add anything further here.

There are four kinds of *opposed terms*:—

Relatives: as, father, son, master, servant.

Contraries: as, cold and heat, health and sickness.

Privatives: as, life, death; sight, blindness; hearing, deafness; knowledge, ignorance.

Contradictories, which consist in a term of the simple negation of that term—seeing, not seeing. The difference which there is between the two last kind of opposites, is, that the privative terms express the negation of a form in a subject which is capable of it, whereas the negatives do not indicate that capacity. Hence, we do not say that a stone is blind or dead, because it is not capable of either seeing or living.

As these terms are opposed, we employ the one in order to deny the other. Contradictory terms have this property, that in taking away one we establish the other.

There are many kinds of comparisons; for we compare things either equal or unequal, similar or dissimilar. We prove that what belongs, or does not belong, to an equal or similar thing, belongs, or does not belong, to another thing to which it is equal or similar.

In unequal things, we prove, negatively, that if that which is more probable is not, that which is less probable is not, for a stronger reason; or, affirmatively, that if that which is less probable is, that which is more probable, is also. We commonly employ differences, or dissimilitudes, in order to destroy that which others have wished to establish by these similitudes, as we destroy the argument which is derived from a judgment, by showing that it was given in another case.

This is, roughly, a part of what is said on the places. There are some things which it is more useful to know only in this way. Those who wish to know more may find it in the authors who have treated this subject more at large. We cannot, however, advise any one to look into the topics of Aristotle, since there is strange confusion in those books; but there are some things very pertinent to this subject in the First Book of his Rhetoric, in which he sets forth various ways of finding out that a thing is useful, pleasing, greater, or smaller. It is nevertheless true, that we cannot attain, in that way, any very valuable knowledge.

CHAPTER XIX.

OF THE DIFFERENT WAYS OF REASONING ILL, WHICH ARE CALLED SOPHISMS.

ALTHOUGH, if we know the rules of good reasoning, it may not be difficult to recognise those which are bad, nevertheless, as examples to be avoided often strike us more than examples to be imitated, it will not be without its use to set forth the principal classes of bad reasoning, which are called *sophisms* or *paralogisms*, since this will enable us yet more readily to avoid them. We have reduced all these to seven or eight, some being so gross that they are not worthy of being noticed.

I.

Proving something other than that which is in dispute.

This sophism is called by Aristotle *ignoratio elenchi*, that is to say, the ignorance of that which ought to be proved against an adversary. It is a very common vice in the controversies of men. We dispute with warmth, and often without understanding one another. Passion, or bad faith, leads us to attribute to our adversary that which is very far from his meaning, in order to carry on the contest with greater advantage; or to impute to him consequences which we imagine may be derived from his doctrine, although he disavows and denies them. All this may be reduced to this first kind of sophism, which an honest and good man ought to avoid above all things.

It could have been wished that Aristotle, who has taken pains to point out to us this defect, had been more careful to avoid it; for it must be confessed that he has not combated honestly many of the ancient philosophers in reporting their opinions. He refutes Parmenides and Melissus for having admitted only a single principle of all things, as if they had understood by this principle that of

which they are composed, whereas, they meant the single and unique principle from which all things have derived their origin—which is God.

He blames all the ancients for not having recognised privation as one of the principles of natural things, and he treats them, on this account, as clowns and fools. But who does not see, that what he represents as a great mystery which had been unknown till he revealed it, could never have been unknown to any one, since it is impossible not to see that the matter of which we make a table must have had the privation of the form of a table, that is to say, that it was not a table before it was made into a table? It is true that these ancients had not availed themselves of this knowledge to explain the principles of natural things, since, in reality, there is nothing which could less contribute to this purpose, it being sufficiently evident that we do not at all know better how to make a clock in consequence of knowing that the matter of which it is made could not have been a clock before it was made into a clock.

It is, therefore, unjust in Aristotle to reproach the ancient philosophers with having been ignorant of a thing which it is impossible to be ignorant of, and to accuse them of not having employed, for the explanation of nature, a principle which could explain nothing; and it is an illusion and a sophism to have produced to the world this principle of privation as a rare secret, since it is not this that we look for, when we attempt to discover the principles of nature. We suppose it to be well known that a thing is not, before it is made, but we wish to know of what elements it is composed—by what cause it has been produced.

There never was, for example, a sculptor, who, in instructing any one how to make a statue, would have given, as the first instruction, that lesson by which Aristotle would begin the explanation of all the works of nature:—My friend, the first thing that it behoves you to know is, that in order to make a statue, it is necessary to choose a piece of marble which is not already that statue which you wish to make.

II.

Assuming as true the thing in dispute.

This is what Aristotle calls *a begging of the question*, which is clearly altogether opposed to true reasoning, since, in all reasoning, that which is employed as proof ought to be clearer and better known than that which we seek to prove.

Galileo, however, has accused him, and with justice, of having himself fallen into this error, when he tried to prove that the earth was at the centre of the world, by this argument:—

The nature of heavy things is to tend to the centre of the world, and of light things to go off from it;

Now, experience proves that heavy things tend towards the centre of the earth, and that light things go off from it;

Therefore, the centre of the earth is the same as the centre of the world.

It is clear that there is in the major of this argument a manifest begging of the question; for we see well enough that heavy things tend towards the centre of the earth; but where did Aristotle learn that they tend towards the centre of the world, unless he assumed that the centre of the earth is the same as the centre of the world?—which is the very conclusion that he wishes to prove by that argument.

Among the pure beggings of the question, too, are the greater part of those arguments which are employed to prove certain anomalous kinds of substances, which are called, in the schools, *substantial forms;* these, it is maintained, are corporeal, though they have no body, which it is difficult enough to comprehend. If there are not substantial forms, say they, there could be no generation; now, there is generation in the world, therefore, there are substantial forms.

We have only to distinguish the equivocation in the word generation, in order to see that this argument is but a pure begging of the question; for if we understand by the word generation the natural production of a new whole in nature, as the production of the chicken which is formed

in an egg, we may say, with reason, that there are generations in this sense; but we cannot conclude that there are substantial forms, since the simple arrangement of parts, by nature, may produce these new wholes, and these new natural beings. But if by the word generation is understood what they commonly understand by it, the production of a new substance which did not exist before, to wit, that substantial form, the very thing which is in dispute, is assumed; since it is plain that he who denies substantial forms will not allow that nature produces substantial forms; and so far is it from being necessary that he should be led, by this argument, to avow such production, that he ought rather to derive from it a directly contrary conclusion in this way: If there are substantial forms, nature must produce something which did not exist before. Now, nature did not produce new substances, since this would be a kind of creation; and, consequently, there are no substantial forms.

The following is another of the same kind:—If there are not substantial forms, say they again, natural beings would not be wholes, which they term *per se*, *totum per se*, but beings *per accidens*; now, they are wholes *per se*; therefore there are substantial forms.

It is still necessary to ask those who employ this argument to have the goodness to explain what they understand by a whole *per se*, *totum per se*; for if they understand, as they do, a being composed of matter and of form, it is clear that this is a begging of the question, since it is as though they should say—If there are not substantial forms, natural beings could not be composed of matter, and substantial forms; now, they are composed of matter, and substantial forms; therefore, there are substantial forms. But if they understand anything else, let them say so, and we shall see that they prove nothing.

We have thus stopped a little by the way, to show the feebleness of the arguments on which are established, in the schools, these sorts of substances, which are discovered neither by the sense nor by the mind, and of which we know nothing further than that they are called substantial forms; because, although those who defend them do so with a very good intention, the principles, nevertheless, which

they employ, and the ideas which they give of these forms, obscure and disturb the very solid and convincing proofs of the immortality of the soul which are derived from the distinction of minds and bodies, and from the impossibility of any substance, which is not matter, perishing through the changes which happen to matter; for, by means of these substantial forms, we unwittingly furnish free thinkers with examples of substances which perish, which are not properly matter, and to which we attribute in animals a multitude of thoughts, that is to say, of actions purely spiritual. Hence, it is useful, for the sake of religion, and for the conviction of the scoffers and irreligious, to take away from them this reply, by showing that nothing can rest on a worse foundation than these perishable substances, which are called substantial forms.

We may reduce, also, to this kind of sophism, the proof which is derived from a principle different from that which is in dispute, but which we know is equally contested by him with whom we dispute. There are, for example, two dogmas equally established amongst catholics; the one, that all the points of faith cannot be proved by Scripture alone; the other, that it is a point of faith that infants are capable of baptism. It would, therefore, be bad reasoning in an anabaptist to prove against the catholics that they are wrong in believing that infants are capable of baptism, since nothing is said of it in the Scripture, because this proof would assume that we ought to believe only what is in the Scripture, which is denied by the catholics.

Finally, we may bring under this sophism all reasonings in which we prove a thing unknown, by another equally or more unknown; or an uncertain thing, by another which is equally or more uncertain.

III.

Taking for a cause that which is not a cause.

This sophism is called *non causa pro causa*. It is very common amongst men, and we fall into it in many ways. One is, through simple ignorance of the true causes of things. It is in this way that philosophers have attributed a thousand effects to the abhorrence of a vacuum, which,

in our time, have been proved to demonstration—and by very ingenious experiments—to be caused by the weight of the air alone, as we may see in the excellent treatise of M. Pascal. The same philosophers commonly teach that vessels full of water break when they freeze, because the water contracts, and thus leaves a vacuum which nature cannot endure. It has, however, been discovered, that they break, on the contrary, because water, when frozen, occupies more room than it did before, which also occasions ice to float in water.

We may refer to the same sophism all attempts to prove by causes which are remote, and prove nothing, things either sufficiently clear of themselves, or false, or at least doubtful, as when Aristotle endeavours to prove that the world is perfect by this reason: *The world is perfect because it contains bodies; body is perfect because it has three dimensions; three dimensions are perfect, because three are all* (quia tria sunt omnia)*; and three are all because we cannot employ the word all, when there are but one or two things, but only when there are three.* We might prove by this reasoning that the smallest atom is as perfect as the world; since it has three dimensions as well as the world. But so far is this from proving that the world is perfect, that, on the contrary, all body as body, is essentially imperfect, and the perfection of the world consists, principally, in its containing creatures which are not bodies.

The same philosopher proves that there are three simple movements, because *there are three dimensions.* It is difficult to see how the one follows from the other.

He proves also that the heavens are unalterable and incorruptible, because they have a circular motion, and there is nothing contrary to circular motion. But, 1, We do not see what the contrariety of motion has to do with the corruption or alteration of body. 2, We see still less how the circular motion from east to west is not contrary to another circular motion from west to east.

Another cause which makes men fall into this sophism, is the empty vanity which makes us ashamed to acknowledge our ignorance, for thus it happens that we prefer rather to feign imaginary causes of the things for which we are asked to account, than to confess that we do not

know the cause, and the way in which we escape this confession of our ignorance is amusing enough. When we see an effect, the cause of which is unknown, we imagine that we have discovered it, when we have joined to that effect a general word of *virtuē* or *faculty*, which forms, in our mind, no other idea except that that effect had some cause, which we knew well before we found that word. There is no one, for example, who does not know that his pulse beats,—that iron, being near a loadstone, unites with it,—that senna purges,—and that the poppy lulls to sleep. Those who make no profession of knowledge, and to whom ignorance is no disgrace, frankly avow that they know these effects, but that they are ignorant of the cause; whereas the learned, who would blush to confess so much, go about the matter in a different way, and pretend that they have discovered the true cause of these effects, which is, that there is in the pulse a pulsific virtuē,—in the magnet a magnetic virtuē,—in the senna a purgative virtuē,—and in the poppy a soporific virtuē. Thus is the difficulty very conveniently resolved; and there is not a Chinese who might not, with as much ease, have checked the admiration which clocks excited in that country, when they were introduced from Europe; for he need only have said that he knew perfectly the reason of that which others thought so marvellous, which was nothing else than that that machine had an *indicating* virtuē which marked the hours on the dial, and a *sonorific* virtuē, which sounded them forth. He would thus have become as learned in the knowledge of clocks as these philosophers are in the knowledge of the stroke of the pulse, the properties of the magnet, of senna, and of the poppy.

There are, in addition to these, other words which serve to render men learned at little expense, such as sympathy, antipathy, occult qualities. But still, all these terms would not convey any false meaning, if those who used them would content themselves with giving to these words, *virtue* and *faculty*, a general notion of cause, whatever it may be, interior or exterior, disposing or active, for it is certain that there is in the loadstone a disposition which leads iron to unite with it, rather than with any other stone, and men may be allowed to call the disposition, be it

whatever it may, *magnetic virtue*. So that they are deceived only when they imagine themselves to be more learned for having discovered that word, or inasmuch as they would persuade us that through that word we comprehend a certain imaginary quality, by which the magnet attracts iron, which neither they nor any one else ever did comprehend.

But there are others who allege as true causes in nature pure chimeras. This is done by the astrologers, who refer everything to the influence of the stars, and who actually, in this way, have discovered that there must be an immoveable heaven beyond that to which they assign motion, because the earth produces different things in different countries (*Non omnis fert omnia tellus; India mittit ebur; molles sua thura Sabæi*), the cause of which must be referred to the influences of a heaven, which, being immoveable, has always the same aspect towards different parts of the earth.

One of them, however, having undertaken to prove, by physical reasons, the immobility of the earth, took, as one of his principal demonstrations, this mysterious reason, that if the earth turned round the sun, the influences of the stars would be disordered, which would cause great confusion in the world.

It is by these influences that the people are frightened when a comet* appears, or when an eclipse happens, as that one in the year 1654, which was to have upset the world, and especially the city of Rome, as it was expressly said in the Chronology of Helvicus, *Romæ fatalis*, although there is no reason why either comets or eclipses should have any considerable effect on the earth, or why causes so general as these should act rather at one place than another, and threaten a king or a prince rather than an artizan. There are, moreover, a hundred of them which have not been followed by any remarkable effect; and if, sometimes, wars, mortalities, plagues, or the death of some prince, happen after comets and eclipses, they happen also without comets and without eclipses. Moreover, these effects are so general and so common, that it would be

* See the "Thoughts on Comets" of Bayle.

strange if they did not happen every year in some part of the world; so that those who say vaguely that such a comet threatens some great man with death, do not risk very much.

It is still worse when they assign chimerical influences as the cause of the vicious or virtuous inclinations of men, and even of their particular actions, and of the events of their life, without having any other ground for doing so, except that of a thousand predictions, it happens by chance that some are true. But if we would judge of things by good sense, we must allow that a torch lighted in the chamber at the hour of birth, ought to have more influence on the body of the child than the planet Saturn, in any aspect, or in any conjunction whatever.

Finally, there are some who assign chimerical causes for chimerical effects, as those who maintain that nature abhors a vacuum, and that she exerts herself to avoid it (which is an imaginary effect, for nature abhors nothing, but all the effects which are attributed to that horror depend on the weight of the air alone), are continually advancing reasons for that imaginary horror, which are still more imaginary. Nature abhors a vacuum, says one of them, because she needs the continuity of bodies for the transmission of influences, and for the propagation of qualities. It is a strange kind of science this, which proves that which is not, by means of that which is not.

Hence, when we engage in seeking after the causes of alleged extraordinary effects, it is necessary to examine with care if the effects are true, for often men weary themselves uselessly, in seeking after the reasons of things which do not exist, and there are an infinite number which ought to be resolved in the same way as Plutarch resolved that question which he proposed to himself, Why those colts which had been chased by the wolves are swifter than others; for after having said that, perhaps it was because those that were slower had been seized by the wolves, and that thus those which escaped were the swiftest; or again, that fear having given them an extraordinary swiftness, they still retained the habit; he finally suggests another solution, which is apparently the real one,—perhaps, says he, after all, it is not true. In this way must be explained

the great number of effects which are attributed to the moon, as that bones are full of marrow when it is at the full, and empty when it is on the wane; that the same is true of crawfish, for there are some who say that all this is false, as some careful observers have assured us they have proved, that bones and crawfish are found indifferently, sometimes full and sometimes empty, during all the changes of the moon. The same is true, to all appearance, in relation to a number of observations which are made for the cutting of wood, for reaping and sowing corn, for grafting trees, for taking medicines. The world will be delivered, by degrees, from all this bondage, which has no other foundation than suppositions of which no one has ever seriously proved the truth. Hence the injustice of those who pretend that, if they allege an experiment as a fact derived from some ancient author, we ought to receive it without examination.

We may bring under this kind of sophism too, that common fallacy of the human mind, *post hoc, ergo propter hoc.* This happens after such a thing, therefore it must be caused by that thing. In this way it has been concluded that the star which is called the dog-star, is the cause of the extraordinary heat we feel during the days which are termed the dog-days, which led Virgil to say, when speaking of that star, which is called, in Latin, Sirius—

> Aut Sirius ardor:
> Ille sitim morbosque ferens mortalibus ægris
> Nascitur, et lævo contristat lumine cœlum.

Although, as Gassendi has very well remarked, there is nothing more unreasonable than this imagination, for that star being on the other side of the line, its influence ought to be much more powerful in these parts, to which it is more perpendicular; notwithstanding which, the days which we call dog-days here are the winter season there; so that, in that country, the inhabitants have much more ground for believing that the dog-star brings them cold, than we have for believing that it is the cause of our heat.

IV.

Incomplete Enumeration.

There is scarcely any vice of reasoning into which able

men fall more easily than that of making imperfect enumerations, and of not sufficiently considering all the ways in which a thing may exist, or take place, which leads them to conclude rashly, either that it does not exist, because it does not exist in a certain way, though it may exist in another, or that it exists in such and such a way, although it may still be in another way, which they have not considered.

We may find examples of these defective reasonings in the proofs by which M. Gassendi establishes the principle of his philosophy, which is that of a vacuum diffused among the parts of matter, called by him *vacuum dissemina-tum*. . . And we refer to these the more willingly, because M. Gassendi having been a celebrated man, stored with a great fund of curious knowledge, the faults even which may be met with in the great number of works which have been published since his death, are not to be despised, but deserve being known; whereas it is very useless to load the memory with those which are found in authors of no reputation.

The first argument which Gassendi employs in order to prove this diffused vacuum, and which he maintains, in one place, should be considered as a demonstration as clear as those of mathematics, is this:—

If there were no vacuum, and the whole were filled with bodies, motion would be impossible, and the universe would be only one vast mass of rigid, inflexible, and immoveable matter, for the universe being completely filled, no body could move without taking the place of some other. Thus if a body, A, move, it must displace another body at least equal to itself, to wit, B; and B, in order to move, must also displace another. Now this can happen only in two ways,—the one, that this displacing of bodies goes on to infinity, which is ridiculous and impossible; the other, that it proceeds in a circle, and thus the last displaced body occupies the place of A.

There is not here, however, so far, any imperfect enumeration; and it is further true, that it is ridiculous to suppose that, in moving a body, the bodies which displace one another would be moved to infinity. All that is maintained is, that the motion goes on in a circle, and that

the last body moved occupies the place of the first, which is A, and that thus all will be filled. This M. Gassendi undertakes to refute by the following argument:—The first moved, which is A, cannot move unless the last, which is X, move. Now X cannot move, because, in order to move, it must take the place of A, which is not yet empty; and therefore, X not being able to move, A cannot either; therefore everything remains immoveable. The whole of this reasoning is founded only on this supposition, that the body X, which is immediately before A, can move on only one condition, which is, that the place of A be already empty when it begins to move; so that, before the moment in which it occupies that place, there be another in which it may be said to be empty. But this supposition is false and imperfect, since there is still another way in which it is possible for X to move, which is, that at the same instant in which it occupies the place of A, A quits that place: and in this case there is no inconvenience,—A pushing B, and B pushing C, and so on to X, and X at the same moment occupying the place of A: in this way there will be motion, but no vacuum.

Now that this is possible, that is to say, that a body may occupy the place of another body at the same moment in which that body quits it, is a thing which we are obliged to acknowledge in any hypothesis whatever, if we admit any continuous matter; if, for example, we distinguish in a rod two parts which immediately follow each other, it is clear that when we move it, at the same instant in which the first quits a space, that space is occupied by the second, and that there is no interval in which we can say that space is void of the first, and not filled by the second. This is still more clear in a circle of iron which turns round its centre; for in this case each part occupies at the same instant the space which has been left by that which preceded it, without there being any necessity for imagining a vacuum. Now, if this is possible in a circle of iron, why may it not be so in a circle partly of wood and partly of air? And why may not the body A, which we will suppose to be wood, push and displace the body B, which we will suppose to be air,—the body B displace another,—and that

other another, until X, which will take the place of A at the same instant in which A leaves it?

It is clear, therefore, that the defect of M. Gassendi's reasoning springs from his belief, that it is necessary in order that a body may take the place of another, for that place to be empty previously, and for at least a moment before, and from his not considering that it is sufficient if it be empty at the same moment.

The other proofs which he adduces are derived from different experiments, by which he showed very clearly that air may be compressed, and that we may force fresh air into a space which seemed already full, as we see in air-balls and air-guns.

On these experiments he founds this reasoning:—If the space A, being already full of air, is able to receive a fresh quantity by compression, it must be either that this fresh air which passes into it, does so by penetrating into the space already occupied by the other air, which is impossible,—or that the air contained in A did not fill it entirely, but that there were between the particles of air void spaces, into which the fresh air is received; and this second hypothesis proves, says he, what I maintain, which is, that there are void spaces between the parts of matter, capable of being filled with new bodies. But it is very strange that M. Gassendi could not perceive that he was reasoning in an imperfect enumeration, and that, besides the hypothesis of penetration, which he judges, with reason, to be naturally impossible, and that of diffused voids between the particles of matter which he wishes to establish, there is a third, of which he says nothing, but which, being possible, renders his argument invalid; for we may suppose that between the greater particles of air there may be a matter finer and more subtile, and which, being able to pass through the pores of all bodies, makes the space which appears full of air able still to receive new air; because this subtile matter, being driven by the particles of air which are forced in, gives place to them by escaping through the pores.

And M. Gassendi was the more called upon to reject that hypothesis, since he himself admits this subtile matter which penetrates bodies, and passes through all pores,—

since he considers heat and cold to be corpuscules which enter into our pores,—since he says the same thing of light,—and since he confesses even in that celebrated experiment which he made with the quicksilver, which remained suspended at the height of two feet three inches and a half, in a tube much longer than this, thus leaving a space above which appeared to be empty, and which certainly was not filled with any sensible matter,—since he confesses, we say, that it could not with reason be maintained, that that space was absolutely void, since light passed into it, which he held to be a body.

Thus, in filling with subtile matter those spaces, which he maintained to be empty, there would have been as much room left for the entrance of new bodies, as though they had actually been empty.

V.

Judging of a thing by that which only belongs to it accidentally.

This sophism is called in the schools *fallacia accidentis*, which is, when we draw a simple, unrestricted, and absolute conclusion, from what is true only by accident. This is done by the number of people who decry antimony, because, being misapplied, it produces bad effects; and by others, who attribute to eloquence all the bad effects which it produces when abused, or to medicine the faults of certain ignorant doctors.

It is in this way that the heretics of the present day have led so many deluded people to believe that we ought to reject, as the inventions of Satan, the invocation of saints, the veneration of relics, the prayer for the dead, because somewhat of abuse and superstition had crept in amongst these holy practices, authorised by all antiquity; as though the bad use which men may make of the best things rendered them bad.

We often fall into this vicious reasoning when we take simple *occasions* for true *causes*. As if any should accuse the christian religion of having been the cause of the murder of an infinite number of persons, who have chosen rather to suffer death than to renounce Jesus Christ; whereas it is to neither the christian religion, nor the con-

stancy of the martyrs, that these murders ought to be attributed, but simply to the injustice and cruelty of the pagans. It is through this sophism, also, that good people are often said to be the cause of all the evils which they might have avoided by doing things which would have offended their conscience; because, if they had chosen to relax in that strict observance of the law of God, these evils would not have happened.

We see also a famous example of this sophism in the ridiculous reasoning of the Epicureans, who concluded that the gods must have a human form, because among all creatures in the world men alone had the use of reason. *The gods*, said they, *are very happy; none can be happy without virtue; there is no virtue without reason; and reason is found nowhere except in the human form; it must be avowed, therefore, that the gods have the human form.* But they were very blind, not to see that although in men the substance which thinks and reasons be united to a human body, it is, nevertheless, not the human figure which enables men to think and reason,—it being absurd to imagine that reason and thought depend on anything which is in a nose, a mouth, cheeks, two arms, two hands, two feet; and it was thus a puerile sophism in these philosophers to conclude that reason could only dwell in the human form, because in man it is accidentally united with that form.

VI.

Passing from a divided sense to a connected sense, or from a connected sense to a divided sense.

The former of these sophisms is called *fallacia compositionis;* the latter, *fallacia divisionis.* They will be understood better by examples.

Jesus Christ says, in the gospel, in speaking of his miracles, *The blind see, the lame walk, the deaf hear.* This cannot be true if we take these things separately, and not together, that is to say, in a divided, and not in a connected sense. For the blind could not see, remaining blind; and the deaf could not hear, remaining deaf;—but those who had been blind before were so no longer, but now saw; and so of the deaf.

It is in the same sense, also, that God is said, in the Scripture, to justify the ungodly. For this does not mean, that he considers as just those who are still ungodly, but that he renders just, by his grace, those who before were ungodly.

There are, on the contrary, propositions which are true only in an opposite sense to the divided sense: as when St Paul says, that liars, fornicators, and covetous men shall not enter into the kingdom of heaven. For this does not mean that none of those who have had these vices shall be saved, but only that those who have continued addicted to them, and have never left them by turning to God, shall have no place in the kingdom of heaven.

It is easy to see that we cannot, without a sophism, pass from one of these senses to the other; and that those, for example, would reason ill, who should promise themselves heaven while remaining in their sins, because Jesus came to save sinners, and because it is said in the gospel that women of evil life shall enter into the kingdom of God before the Pharisees; or who, on the other hand, having forsaken evil, should despair of their salvation, as having nothing to expect but the punishment of their sins, because it is said that the anger of God is reserved against all those who live ungodly lives, and that none who are vicious shall have any part in the inheritance of Jesus Christ. The first would pass from the divided sense to the compounded, in promising themselves, though still continuing sinners, that which is only promised to those who cease to be so, by true conversion; and the last would pass from the compounded sense to the divided, in applying to those who have been sinners, but who cease to be so by turning to God, that which refers only to sinners remaining in their sins and wicked life.

VII.

Passing from what is true in some respect, to what is true absolutely.

This is what is called in the schools *a dicto secundum quid ad dictum simpliciter.* The following are examples: The Epicureans proved, again, that the gods must have the

human form because it is the most beautiful, and everything which is beautiful must be in God. This was bad reasoning; for the human form is not beautiful absolutely, but only in relation to bodies. And thus, the perfection being only in some respect, and not absolutely, it did not follow that it must be in God because all perfections are in God, it being only those which are perfections absolutely, that is to say, which contain no imperfection, which were necessary in God.

We find also in Cicero, in the Third Book, of the nature of the gods, an absurd argument of Cotta against the existence of God, which may be referred to the same vice. *How*, says he, *can we conceive God, since we can attribute no virtue to him? For shall we say that he has prudence? But since prudence consists in the choice between good and evil, what need can God have for this choice, not being capable of any evil? Shall we say that he has intelligence and reason? But reason and intelligence serve to discover to us that which is unknown from that which is known; now, there can be nothing unknown to God. Neither can justice be in God, because this relates only to the intercourse of men; nor temperance, since he has no desires to moderate; nor strength, since he is susceptible of neither pain nor labour, and is not exposed to any danger. How, therefore, can that be a god which has neither intelligence nor virtue?*

It is difficult to conceive anything more impertinent than this method of reasoning. It resembles the notion of a rustic who, having never seen houses covered with anything but thatch, and having heard that there were in towns no roofs of thatch, should conclude therefrom that there were no houses in towns, and that those who dwell there are very miserable, being exposed to all the inclemencies of the weather. This is how Cotta, or rather, Cicero, reasons. There can be no virtues in God like those in men; therefore, there is no virtue in God. And what is so marvellous is, that he concludes that there is no virtue in God, only because the imperfection which is found in human virtue cannot be in God; so that what proves to him that God has no intelligence, is the fact that nothing is hid from him, that is to say, that he sees nothing because he sees everything; that he can do nothing, be-

cause he can do everything; that he enjoys no happiness, because he possesses all happiness.

VIII.

Abusing the ambiguity of words, which may be done in different ways.

We may reduce to this kind of sophism all those syllogisms which are vicious, though having four terms, whether this be because the middle is taken twice particularly, or because it is taken in one sense in the first proposition, and in another in the second, or, finally, because the terms of the conclusion are not taken in the same sense in the premises as in the conclusion: For we do not restrict the word ambiguity to those words alone that are manifestly equivocal, which scarcely ever mislead any one, but we comprise under it anything which may change the meaning of a word, especially when men do not easily perceive that change, because different things being signified by the same word, they take them for the same thing. On this subject, we may refer to what has been said towards the end of the First Part, where we have also spoken of the remedy which should be employed against the confusion of ambiguous words by defining them so precisely that none can be deceived.

We shall content ourselves, therefore, with referring to some examples of this ambiguity, which sometimes deceive men of ability, such as those which we often find in words which signify some whole, which may be taken either collectively, for all their parts together, or distributively, for each of these parts.

In this way is to be resolved that sophism of the stoics, who concluded that the world was an animal endowed with reason, because *that which has the use of reason is better than that which has not.* "Now there is nothing," say they, "which is better than the world, therefore, the world has the use of reason." The minor of this argument is false, since it attributes to the world that which belongs only to God, which is, that of being such that it is impossible to conceive anything better, or more perfect. But in limiting ourselves to creatures, although we may say that there

is nothing better than the world, taking it, collectively, for the totality of all the beings that God has created, all that we can conclude from this at most is, that the world has the use of reason in relation to some of its parts, such as are angels and men, and not that the whole together was an animal endowed with the use of reason. This would be the same kind of bad reasoning as to say—man thinks; now, man is composed of mind and body; therefore, mind and body think. For it is enough, in order that we may attribute thought to the whole man, that he thinks in relation to one of the parts; and from this it does not at all follow that he thinks in the other.

IX.

Deriving a general conclusion from a defective induction.

When, from the examination of many particular things, we rise to the knowledge of a general truth—this is called induction. Thus, when we find, by the examination of many seas, that the water in them is salt, and of many rivers, that the water in them is fresh, we infer, generally, that the water of the sea is salt, and that of rivers fresh. The different experiments by which we have found that gold does not diminish in the fire, leads us to judge that this is true of all gold. And since no people have ever been found who do not speak, we believe confidently that all men speak, that is to say, employ sounds to express their thoughts. It is in this way that all our knowledge begins, since individual things present themselves to us before universals, although, afterwards, the universals help us to know the individual.

It is, however, nevertheless true, that induction alone is never a certain means of acquiring perfect knowledge, as we shall show in another place. The consideration of individual things furnishes to our mind only the occasion of turning its attention to its natural ideas, according to which it judges of the truth of things in general. For it is true, for example, that I might never perhaps have been led to consider the nature of a triangle if I had not seen a triangle, which furnished me with the occasion of thinking of it. But it, nevertheless, is not the particular examination of

all the triangles which makes me conclude generally and certainly of all, that the space which they contain is equal to that of the rectangle of their whole base and a part of their side (for this examination would be impossible), but simply the consideration of what is contained in the idea of a triangle which I find in my mind.

Be this as it may, reserving the consideration of this subject for another place, it is enough to say here, that defective inductions, those, that is to say, which are not complete, often lead us to fall into error; and I shall content myself with referring to one remarkable example of this.

All philosophers had believed, up to the present time, as an undoubted truth, that a syringe being well stopped, it would be impossible to draw out the piston without bursting it, and that we might make water rise as high as we chose in pumps by suction. What made this to be so firmly believed was, that it was supposed to have been verified by a most certain induction derived from a multitude of experiments; but, both are found to be false, since new experiments have been made which have proved that the piston of a syringe, however well it may be stopped, may be drawn out, provided we employ a force equal to the weight of a column of water of more than 23 feet in height, of the diameter of the syringe; and that we cannot raise water, by suction in a pump, higher than 22 or 23 feet

CHAPTER XX.

OF THE BAD REASONINGS WHICH ARE COMMON IN CIVIL LIFE AND IN ORDINARY DISCOURSE.

We have seen some examples of the faults which are most common in reasoning on scientific subjects; but, since the principal use of reason is not in relation to those kind of

subjects which enter but little into the conduct of life, and in which there is much less danger of being deceived, it would, without doubt, be much more useful to consider generally what betrays men into the false judgments which they make on every kind of subject, and principally on that of morals, and of other things which are important in civil life, and which constitute the ordinary subject of their conversation. But, inasmuch as this design would require a separate work, which would comprehend almost the whole of morals, we shall content ourselves with indicating here, in general, some of the causes of those false judgments which are so common amongst men.

We do not stay to distinguish false judgments from bad reasonings, and shall inquire indifferently into the causes of each,—both because false judgments are the sources of bad reasonings, and produce them as a necessary consequence, and because in reality there is almost always a concealed and enveloped reasoning in what appears to be a simple judgment, there being always something which operates on the motive and principle of that judgment. For example, when we judge that a stick which appears bent in the water is really so, this judgment is founded on that general and false proposition, that what appears bent to our senses, is so really; and this involves a reasoning, though not developed. In considering them generally, the causes of our errors appear to be reducible to two principles: the one *interior*—the irregularity of the will, which troubles and disorders the judgment; the other *external*, which lies in the objects of which we judge, and which deceive our minds by false appearances. Now although these causes almost always appear united together, there are, nevertheless, certain errors, in which one prevails more than the other; and hence we shall treat of them separately.

OF THE SOPHISMS OF SELF-LOVE, OF INTEREST, AND OF PASSION.

I.

If we examine with care what commonly attaches men rather to one opinion than to another, we shall find that it

is not a conviction of the truth, and the force of the reasons, but some bond of self-love, of interest, or of passion. This is the weight which bears down the scale, and which decides us in the greater part of our doubts. It is this which gives the greatest impetus to our judgments, and which holds us to them most forcibly. We judge of things, not by what they are in themselves, but by what they are in relation to us, and truth and utility are to us but one and the same thing.

No other proofs are needed than those which we see every day, to show that the things which are held everywhere else as doubtful, or even as false, are considered most certain by all of some one nation, or profession, or institution. For, since it cannot be that what is true in Spain should be false in France, nor that the minds of all Spaniards are so differently constituted from those of Frenchmen, as that, judging by the same rules of reasoning, that which appears generally true to the one should appear generally false to the others, it is plain that this diversity of judgment can arise from no other cause except that the one choose to hold as true that which is to their advantage, and that the others, having no interest at stake, judge of it in a different way.

Nevertheless, what can be more unreasonable than to take our interest as the motive for believing a thing? All that it can do, at most, is to lead us to consider with more attention the reasons which may enable us to discover the truth of that which we wish to be true; but it is only the truth which must be found in the thing itself, independently of our desires, which ought to convince us. I am of such a country; therefore, I must believe that such a saint preached the gospel there. I am of such an order; therefore, I must believe that such a privilege is right. These are no reasons. Of whatever order, and of whatever country you may be, you ought to believe only what is true; and what you would have been disposed to believe, though you had been of another country, of another order, and of another profession.

II.

But this illusion is much more evident when any change

takes place in the passions; for, though all things remain in their place, it appears, nevertheless, to those who are moved by some new passion, that the change which has taken place in their own heart alone, has changed all external things which have any relation to them. How often do we see persons who are able to recognise no good quality, either natural or acquired, in those against whom they have conceived an aversion, or who have been opposed in something to their feelings, desires, and interests? This is enough to render them at once, in their estimation, rash, proud, ignorant, without faith, without honour, and without conscience. Their affections and desires are not any more just or moderate than their hatred. If they love any one, he is free from every kind of defect. Everything which they desire is just and easy, everything which they do not desire is unjust and impossible, without their being able to assign any other reason for all these judgments than the passion itself which possesses them; so that, though they do not expressly realise to their mind this reasoning—I love him; therefore, he is the cleverest man in the world: I hate him; therefore, he is nobody; —they realise it to a great extent, in their hearts; and therefore, we may call sophisms and delusions of the heart those kinds of errors which consist in transferring our passion to the objects of our passions, and in judging that they are what we will or desire that they may be; which is without doubt very unreasonable, since our desires can effect no change in the existence of that which is without us, and since it is God alone whose will is efficacious enough to render all things what he would have them to be.

III.

We may reduce to the same illusion of self-love, that of those who decide everything by a very general and convenient principle, which is, that they are right, that they know the truth; from which it is not difficult to infer that those who are not of their opinion are deceived,—in fact, the conclusion is necessary.

The error of these persons springs solely from this, that the good opinion which they have of their own insight

leads them to consider all their thoughts as so clear and evident, that they imagine the whole world must accept them as soon as they are known. Hence it is that they so rarely trouble themselves to furnish proofs,—they seldom listen to the opinions of others, they wish all to yield to their authority, since they never distinguish their authority from reason. They treat with contempt all those who are not of their opinion, without considering that if others are not of their opinion, so neither are they of the opinion of others, and that it is unjust to assume, without proof, that we are in the right when we attempt to convince others, who are not of our opinion, simply because they are persuaded that we are not in the right.

IV.

There are some, again, who have no other ground for rejecting certain opinions than this amusing reasoning:—if this were so, I should not be a clever man; now, I am a clever man; therefore, it is not so. This is the main reason which, for a long time, led to the rejection of some most useful remedies, and most certain discoveries; for those who had not known them previously, fancied that by admitting them, they would have confessed themselves to have been hitherto deceived. "What," said they, "if the blood circulate, if the food is not carried to the liver by the messaric veins, if the venous artery carry the blood to the heart, if the blood rise by the descending hollow vein, if nature does not abhor a vacuum, if the air be heavy and have a movement below, I have been ignorant of many important things in anatomy and in physics. These things, therefore, cannot be." But, to remedy this folly, it is also necessary to represent fully to such that there is very little discredit in being mistaken, and that they may be accomplished in other things, though they be not in those which have been recently discovered.

V.

There is, again, nothing more common than to see people mutually reproaching each other, and accusing one

another—for example, of obstinacy, passion, and chicanery —when they are of different opinions. There are scarcely any advocates who do not accuse each other of delaying the process, and concealing the truth by artifices of speech; and thus those who are in the right, and those who are in the wrong, with almost the same language, make the same complaints, and attribute to each other the same vices. This is one of the most injurious things possible in the life of men, for it throws truth and error, justice and injustice, into an obscurity so profound, that the world, in general, cannot distinguish between them; and hence it happens, that many attach themselves, by chance and without knowledge, to one of these parties, and that others condemn both as being equally wrong.

All this confusion springs, again, from the same malady which leads each one to take, as a principle, that he is in the right; for, from this, it is not difficult to infer, that all who oppose us are obstinate, since, to be obstinate is not to submit to the right.

But still, although it be true that these reproaches of passion, of blindness, and of quibbling, which are very unjust on the part of those who are mistaken, are just and right on the part of those who are not so; nevertheless, since they assume that truth is on the side of him who makes them, wise and thoughtful persons, who treat of any contested matter, should avoid using them, before they have thoroughly established the truth and justice of the cause which they maintain. They will never then accuse their adversaries of obstinacy, of rashness, of wanting common sense, before they have clearly proved this. They will not say, before they have shown it, that they fall into intolerable absurdities and extravagances; for the others, on their side, will say the same of them, and thus accomplish nothing. And thus they will prefer rather to observe that most equitable rule of St Augustine:—*Omittamus ista communia, quæ dici ex utraque parte possunt, licet vere dici ex utraque parte non possint.*

They will thus be content to defend truth by the weapons which are her own, and which falsehood cannot borrow. These are clear and weighty reasons.

VI.

The mind of man is not only in love with itself, but it is also naturally jealous, envious of, and ill-disposed towards, others. It can scarcely bear that they should have any advantage, but desires it all for itself; and as it is an advantage to know the truth, and furnish men with new views, a secret desire arises to rob those who do this of the glory, which often leads men to combat, without reason, the opinions and inventions of others.

Thus, as self-love often leads us to make these ridiculous reasonings: It is an opinion which I discovered, it is that of my order, it is an opinion which is convenient, it is, therefore, true; natural ill-will leads us often to make these others, which are equally absurd: Some one else said such a thing; it is, therefore, false: I did not write that book; it is, therefore, a bad one.

This is the source of the spirit of contradiction so common amongst men, and which leads them, when they hear or read anything of another, to pay but little attention to the reasons which might have persuaded them, and to think only of those which they think may be offered against it; they are always on their guard against truth, and think only of the means by which it may be repressed and obscured—in which they are almost invariably successful, the fertility of the human mind in false reasons being inexhaustible.

When this vice is in excess, it constitutes one of the leading characteristics of the spirit of pedantry, which finds its greatest pleasure in quibbling with others on the pettiest things, and in contradicting everything with a pure malignity. But it is often more imperceptible and more concealed; and we may say, indeed, that no one is altogether free from it, since it has its root in self-love, which always lives in men.

The knowledge of this malignant and envious disposition, which dwells deep in the heart of men, shows us that one of the most important rules which we can observe, in order to win those to whom we speak from error, and bring them over to the truth of which we would persuade them, is to excite their envy and jealousy as little as pos-

sible by speaking of ourselves, and by presenting to them objects which may engage their attention.

For, since men love scarcely any but themselves, they cannot bear that another should intrude himself upon them, and thus throw into shade the main object of their regard. All that does not refer to themselves is odious and impertinent, and they commonly pass from the hatred of the man to the hatred of his opinions and reasons. Hence, wise persons avoid as much as possible revealing to others the advantages which they have, they avoid attracting attention to themselves in particular, and seek rather, by hiding themselves in the crowd, to escape observation, in order that only the truth which they propose may be seen in their discourse.

The late M. Pascal, who knew as much of true rhetoric as any one ever did, carried this rule so far as to maintain that a well-bred man ought to avoid mentioning himself, and even to avoid using the words *I* and *me;* and he was accustomed to say, on this subject, that christian piety annihilated the human *me*, and that human civility concealed and suppressed it. This rule, however, is not to be observed too rigidly, for there are many occasions in which it would uselessly embarrass us to avoid these words; but it is always good to keep it in view, to preserve us from the wretched custom of some individuals, who speak only of themselves, and who quote themselves continually, when their opinion is not asked for. This leads those who hear them to suspect that this constant recurrence to themselves arises only from a secret pleasure, which leads them continually to that object of their love, and thus excites in them, by a natural consequence, a secret aversion to these people, and towards all that they say. This shows us that one of the characteristics most unworthy of a sensible man is that which Montaigne has affected in entertaining his readers with all his humours, his inclinations, his fancies, his maladies, his virtues, and his vices, which could arise only from a weakness of judgment, as well as a violent love for himself. It is true that he attempted as far as possible to remove from himself the suspicion of a low and vulgar vanity, by speaking freely of his defects, as well as of his good qualities, which has something

amiable in it, from the appearance of sincerity; but it is easy to see that all that is only a trick and artifice, which should only render it still more odious. He speaks of his vices in order that they may be known, not that they may be detested; he does not think for a moment that he ought to be held in less esteem; he regards them as things very indifferent, and rather as creditable than disgraceful; if he reveals them it gives him no concern, and he believes that he will not be, on that account, at all more vile or contemptible. But when he apprehends that anything will degrade him at all, he is as careful as any one to conceal it; hence, a celebrated author of the present day pleasantly remarks, that though he takes great pains, without any occasion, to inform us, in two places of his book, that he had a page, who was an officer of very little use in the house of a gentleman of six thousand livres a year, he has not taken the same pains to inform us that he had also a clerk, having been himself counsellor of the parliament of Bordeaux. This employment, though very honourable in itself, did not satisfy the vanity he had of appearing always with the air of a gentleman and of a cavalier, and as one unconnected with the brief and gown.

It is, nevertheless, probable, however, that he would not have concealed this circumstance of his life if he could have found some marshal of France who had been counsellor of Bordeaux, as he has chosen to inform us that he had been mayor of that town, but only, after having informed us that he had succeeded Marshal de Brion in that office, and had been succeeded by Marshal de Matignon.

But the greatest vice of this author is not that of vanity, for he is filled with such a multitude of shameful scandals, and of epicurean and impious maxims, that it is wonderful that he has been endured so long by every body, and that there are even men of mind who have not discovered the poison.

No other proofs are necessary, in order to judge of his libertinism, than the manner in which he speaks even of his vices; for allowing, in many places, that he had been guilty of a great number of criminal excesses, he declares, nevertheless, that he did not repent of them at all, and that if he had to live over again he would live as he had

done. "As for me," says he, "I cannot desire in general to be other than I am. I cannot condemn my universal form, though I may be displeased with it, and pray God for my entire reformation, and for the pardon of my natural weakness; but this I ought not to call repentance any more than the dissatisfaction I may feel at not being an angel, or Cato; my actions are regulated and conformed to my state and condition; I cannot be better, and repentance does not properly refer to things which are not in our power. I never expected incongruously to affix the tail of a philosopher to the head and body of an abandoned man, or that the meagre end of my life was to disavow and deny the most beautiful, complete, and largest portion of the whole. If I had to live over again I would live as I have done; I do not lament over the past; I do not fear for the future." Awful words, which denote the entire extinction of all religious feeling, but which are worthy of him who said, also, in another place: "I plunge myself headlong blindly into death, as into a dark and silent abyss, full of a mighty sleep, full of unconsciousness and lethargy, which engulphs me at once, and overwhelms me in a moment." And in another place: "Death, which is only a quarter of an hour's passion, without consequence, and without injury, does not deserve any special precepts."

Although this digression appears widely removed from this subject, it belongs to it nevertheless, for this reason —that there is no book which more fosters that bad custom of speaking of one's self, being occupied with one's self, and wishing all others to be so too. This wonderfully corrupts reason, both in ourselves, through the vanity which always accompanies these discourses, and in others, by the contempt and aversion which they conceive for us. Those only may be allowed to speak of themselves who are men of eminent virtue, and who bear witness by what means they have become so, so that if they make known their good actions, it is only to excite others to praise God for these, or to instruct them; and if they publish their faults, it is only to humble themselves before men, and to deter them from committing these. But, for ordinary persons, it is a ridiculous vanity to wish to inform others of their petty advantages; and it is insufferable effrontery to

reveal their excesses to the world without expressing their sorrow for them, since the last degree of abandonment in vice is, not to blush for it, and to have no concern or repentance on account of it, but to speak of it indifferently as of anything else; in which mainly lies the wit of Montaigne.

VII.

We may distinguish to some extent, from malignant and envious contradiction, another kind of disposition not so bad, but which produces the same faults of reasoning; this is the spirit of debate, which is, however, a vice very injurious to the mind.

It is not that discussions, generally, can be censured. We may say, on the contrary, that provided they be rightly used, there is nothing which contributes more towards giving us different hints, both for finding the truth, or for recommending it to others. The movement of the mind, when it works alone, in the examination of any subject, is commonly too cold and languid. It needs a certain warmth to inspire it, and awaken its ideas, and it is commonly through the various obstacles which we meet with that we discover wherein the obscurity and the difficulties of conviction consist, which leads us to endeavour to overcome them.

It is true, however, that just in proportion as this exercise is useful, when we employ it aright, and without any mixture of passion, so, in that proportion, is it dangerous when we abuse it, and pride ourselves on maintaining our opinion at whatever cost, and in contradicting that of others. Nothing can separate us more widely from the truth, and plunge us into error, than this kind of disposition. We become accustomed, unconsciously, to find reasons for everything, and to place ourselves above reason by never yielding to it, which leads us by degrees to hold nothing as certain, and to confound truth with error, in regarding both as equally probable. This is why it is so rare a thing for a question to be determined by discussion; and why it scarcely ever happens that two philosophers agree. They always find replies and rejoinders, since their aim is not to

avoid error but silence, and since they think it less disgraceful to remain always in error than to avow that they were mistaken.

Thus, unless at least we have been accustomed by long discipline to retain the perfect mastery over ourselves, it is very difficult not to lose sight of truth in debates, since there are scarcely any exercises which so much arouse our passions. What vices have they not excited, says a celebrated author, being almost always governed by anger? We pass first to a hatred of the reasons, and then of the persons. We learn to dispute only to contradict; and each contradicting and being contradicted, it comes to pass that the result of the debate is the annihilation of truth. One goes to the east and another to the west—one loses the principle in dispute, and another wanders amidst a crowd of details—and after an hour's storm, they know not what they were discussing. One is above, another below, and another at the side—one seizes on a word or similitude—another neither listens to, nor still less understands, what his opponent says, and is so engaged with his own course that he only thinks of following himself, not you.

There are some, again, who, conscious of their weakness, fear everything, refuse everything, confuse the discussion at the onset, or, in the midst of it, become obstinate and are silent, affecting a proud contempt, or a stupid modesty of avoiding contention. One, provided only that he is effective, cares not how he exposes himself—another counts his words and weighs his reasons—a third relies on his voice and lungs alone. We see some who conclude against themselves, and others who weary and bewilder every one with prefaces and useless digressions. Finally, there are some who arm themselves with abuse, and make a german quarrel in order to finish the dispute, when they have been worsted in argument. These are the common vices of our debates, which are ingeniously enough represented by this writer, who, without ever having known the true grandeur of man, has sufficiently canvassed his defects.

We may hence judge how liable these kinds of conferences are to disorder the mind, at least unless we take great care not only not to fall ourselves first into these

errors, but also not to follow those who do, and so to govern ourselves that we may see them wander without wandering ourselves, and without losing the end which we ought to seek, which is the elucidation of the truth which is under discussion.

VIII.

We find some persons, again, principally amongst those who attend at court, who, knowing very well how inconvenient and disagreeable these controversial dispositions are, adopt an immediately opposite course, which is that of contradicting nothing, but of praising and approving everything indifferently. This is what is called complaisance, which is a disposition more convenient indeed for our fortune, but very injurious to our judgment, for as the controversial hold as true the contrary of what is said to them, the complaisant appear to take as true everything which is said to them, and this habit corrupts, in the first place their discourse, and then their minds.

Hence it is that praises are become so common, and are given so indifferently to every one, that we know not what to conclude from them. There is not a single preacher in the 'Gazette,' who is not most eloquent, and who does not ravish his hearers by the profundity of his knowledge. All who die are illustrious for piety; and the pettiest authors might make books of praises which they receive from their friends; so that, amidst this profusion of praises, which are made with such little discernment, it is matter of wonder that some are found so eager for them, and who treasure so carefully those which are given to them.

It is quite impossible that this confusion in the language should not produce some confusion in the mind, for those who adopt the habit of praising everything, become accustomed also to approve of everything. But though the falsehood were only in the words, and not in the mind, this would be sufficient to lead those who sincerely love the truth, to avoid it. It is not necessary to reprove everything which may be bad, but it is necessary to praise only what is truly praiseworthy, otherwise we lead those whom we

praise in this way into error. We help to deceive those who judge of these persons by these praises; and we commit a wrong against those who truly deserve praises, by giving them equally to those who do not deserve them. Finally, we destroy all the trustworthiness of language, and confuse all ideas and words, by causing them to be no longer signs of our judgments and thoughts, but simply an outward civility which we give to those whom we praise as we might do a bow, for this is all that we ought to infer from ordinary praises and compliments.

IX.

Amongst the various ways by which self-love plunges men into error, or rather strengthens them in it, and prevents their escape from it, we must not forget one which is, without doubt, one of the principal and most common. This is the engaging to maintain any opinion, to which we may attach ourselves from other considerations than those of its truth. For this determination to defend our opinion leads us no longer to consider whether the reasons we employ are true or false, but whether they will avail to defend that which we maintain. We employ all sorts of reasons, good and bad, in order that there may be some to suit every one; and we sometimes proceed even to say things which we well know to be absolutely false, if they will contribute to the end which we seek. The following are some examples:—

An intelligent man would hardly ever suspect Montaigne of having believed all the dreams of judicial astrology. Nevertheless, when he needs them for the purpose of foolishly degrading mankind, he employs them as good reasons. "When we consider," says he, "the dominion and power which these bodies have, not only on our lives, and on the state of our fortune, but also on our inclinations, which are governed, driven, and disturbed, according to their influences, how can we deprive them of a soul, of life, and of discourse?"

Does he wish to destroy the advantage which men have over beasts? He relates to us absurd stories, whose extravagance he knew better than any one, and derives from

them these still more absurd conclusions:—"There have been," says he, "some who boasted that they understood the language of brutes, as Apollonius Thyaneus, Melampus, Tiresias, Thales, and others; and since what the cosmographers say is true, that there are some nations which receive a dog as their king, they must give a certain interpretation to his voice and movements."

We might conclude, for the same reason, that when Caligula made his horse consul, the orders which he gave in the discharge of that office must have been clearly understood. But we should do wrong in accusing Montaigne of this bad consequence; his design was not to speak reasonably, but to gather together a confused mass of everything which might be said against men, which is, however, a vice utterly opposed to the justness of mind and sincerity of a good man.

Who, again, would tolerate this other reasoning of the same author, on the subject of the auguries which the pagans made from the flight of birds, and which the wisest amongst them derided? "Amongst all the predictions of time past," says he, "the most ancient, and the most certain, were those which were derived from the flight of birds. We have nothing of the like kind—nothing so admirable; that rule, that order of the moving of the wing, through which the consequences of things to come were obtained, must certainly have been directed by some excellent means to so noble an operation; for it is insufficient to attribute so great an effect to some natural ordinance, without the intelligence, agreement, or discourse of the agent which produces it; and such an opinion is evidently false."

Is it not a delightful thing to see a man who holds that nothing is either evidently true or evidently false, in a treatise expressly designed to establish Pyrrhonism, and to destroy evidence and certainty, deliver to us seriously these dreams as certain truths, and speak of the contrary opinion as evidently false? But he is amusing himself at our expense when he speaks in this way, and he is without excuse in thus sporting with his readers, by telling them things which he does not, and could not without absurdity, believe.

He was, without doubt, as good a philosopher as Virgil, who does not ascribe to any intelligence in the birds even those periodical changes which we observe in their movement according to the difference of the air, from which we may derive some conjecture as to rain and fine weather. This may be seen in these admirable verses from the Georgics:—

> "Non equidem credo quia sit divinitus illis
> Ingenium, aut rerum fato prudentia major;
> Verum ubi tempestas et cœli mobilis humor.
> Mutavere vias, et Jupiter humidus austris
> Densat erant quæ rara modo, et quæ densa relaxat;
> Vertuntur species animorum, ut corpora motus
> Nunc hos, nunc alios: dum nubila ventus agebat;
> Concipiant, hinc ille avium concentus in agris,
> Et lætæ pecudes, et ovantes gutture corvi."

But these mistakes being voluntary, all that is necessary to avoid them is a little good faith. The most common, and the most dangerous, are those of which we are not conscious, because the engagement into which we have entered to defend an opinion disturbs the view of the mind, and leads it to take as true that which contributes to its end. The only remedy which can be applied to these is to have no end but truth, and to examine reasonings with so much care, that even prejudice shall not be able to mislead us.

OF THE FALSE REASONINGS WHICH ARISE FROM OBJECTS THEMSELVES.

We have already noticed that we ought not to separate the inward causes of our errors from those which are derived from objects, which may be called the outward, because the false appearance of these objects would not be capable of leading us into error, if the will did not hurry the mind into forming a precipitate judgment, when it is not as yet sufficiently enlightened.

Since, however, it cannot exert this power over the understanding in things perfectly evident, it is plain that the obscurity of the objects contributes somewhat to our mistakes; and, indeed, there are often cases in which the

passion which leads us to reason ill is almost imperceptible. Hence it is useful to consider separately those illusions which arise principally from the things themselves:—

I.

It is a false and impious opinion, that truth is so like to falsehood, and virtue to vice, that it is impossible to distinguish between them; but it is true that, in the majority of cases, there is a mixture of truth and error, of virtue and vice, of perfection and imperfection, and that this mixture is one of the most ordinary sources of the false judgments of men.

For it is through this deceptive mixture that the good qualities of those whom we respect lead us to approve of their errors, and that the defects of those whom we do not esteem lead us to condemn what is good in them, since we do not consider that the most imperfect are not so in everything, and that God leaves in the best imperfections, which, being the remains of human infirmity, ought not to be the objects of our respect or imitation.

The reason of this is, that men rarely consider things in detail; they judge only according to their strongest impression, and perceive only what strikes them most: thus, when they perceive a good deal of truth in a discourse, they do not notice the errors which are mixed with it; and, on the contrary, when the truths are mingled with many errors, they pay attention only to the errors,—the strong bears away the weak, and the most vivid impression effaces that which is more obscure.

It is, however, a manifest injustice to judge in this way. There can be no possible reason for rejecting reason, and truth is not less truth for being mixed with error. It does not belong to men, although men may propound it. Thus, though men, by reason of their errors, may deserve to be condemned, the truth which they advance ought not to be rejected.

Thus justice and truth require, that in all things which are thus made up of good and evil, we distinguish between them; and in this wise separation it is that mental precision mainly appears. Hence the fathers of the church

have taken from pagan books very excellent things for their morals, and thus St Augustine has not scrupled to borrow from an heretical Donatist seven rules for interpreting Scripture.

Reason obliges us, when we can, to make this distinction; but since we have not always time to examine in detail the good and evil that may be in everything, it is right, in such circumstances, to give to them the name which they deserve from their preponderating element. Thus we ought to say that a man is a good philosopher who commonly reasons well, and that a book is a good book which has notoriously more of good than evil in it.

Men, however, are very much deceived in these general judgments; for they often praise and blame things from the consideration only of what is least important in them, —want of penetration leading them not to discover what is most important, when it is not the most striking: thus, although those who are wise judges in painting value infinitely more design than colour, or delicacy of touch, the ignorant are, nevertheless, more impressed by a painting whose colours are bright and vivid, than by another more sober in colour, however admirable in design.

It must, however, be confessed, that false judgments are not so common in the arts, since those who know nothing about them defer more readily to the opinion of those who are well informed; but they are most frequent in those things which lie within the jurisdiction of the people, and of which the world claims the liberty of judging, such as eloquence.

We call, for example, a preacher eloquent, when his periods are well turned, and when he uses no inelegant words; and from this M. Vaugelas says, in one place, that a bad word does a preacher or an advocate more harm than a bad reasoning. We must believe that this is simply a truth of fact which he relates, and not an opinion which he supports. It is true that we find people who judge in this way, but it is true also that there is nothing more unreasonable than these judgments; for the purity of language, and the multitude of figures, are but to eloquence what the colouring is to a painting—that is to say, only its lower and more sensuous part; but the most important

part consists in conceiving things forcibly, and in expressing them so that we may convey to the minds of the hearers a bright and vivid image, which shall not only convey these things in an abstract form, but with the emotions, also, with which we conceive them; and this we may find in men of inelegant speech and unbalanced periods, while we meet with it rarely in those who pay so much attention to words and embellishments, since this care distracts their attention from things, and weakens the vigour of their thoughts,—as painters remark, that those who excel in colours do not commonly excel in design—the mind not being capable of this double application, and attention to the one injuring the other.

We may say, in general, that the world values most things by the exterior alone, since we find scarcely any who penetrate to the interior and to the bottom of them; everything is judged according to the fashion, and unhappy are those who are not in favour. Such a one is clever, intelligent, solid, as much as you will, but he does not speak fluently, and cannot turn a compliment well; he may reckon on being little esteemed through the whole of his life by the generality of the world, and on seeing a multitude of insignificant minds preferred before him. It is no great evil not to have the reputation which we merit, but it is a vast one to follow these false judgments, and to judge of things only superficially; and this we are bound, as far as possible, to avoid.

II.

Amongst the causes which lead us into error, by a false lustre, which prevents our recognising it, we may justly reckon a certain grand and pompous eloquence, which Cicero calls *abundantem sonantibus verbis uberibusque sententiis;* for it is wonderful how sweetly a false reasoning flows in at the close of a period which well fits the ear, or of a figure which surprises us by its novelty, and in the contemplation of which we are delighted.

These ornaments not only veil from our view the falsehoods which mingle with discourse, but they insensibly engender them, since it often happens that they are neces-

sary to the completion of the period or the figure. Thus, when we hear an orator commencing a long gradation, or an antithesis of many members, we have reason to be on our guard, since it rarely happens that he finishes it without exaggerating the truth, in order to accommodate it to the figure. He commonly disposes of it as we do the stones of a building, or the metal of a statue: he cuts it, lengthens it, narrows it, disguises it, as he thinks fit, in order to adapt it to that vain work of words which he wishes to make.

How many false thoughts has the desire of making a good point produced? How many have been led into falsehood for the sake of a rhyme? How many foolish things have certain Italian authors been led to write, through the affectation of using only Ciceronian words, and of what is called pure Latinity? Who could help smiling to hear Bembo say that a pope had been elected by the favour of the immortal gods—*Deorum immortalium beneficiis?* There are poets, even, who imagine that the essence of poetry consists in the introduction of pagan divinities; and a German poet, a good versifier enough, though not a very judicious writer, having been justly reproached by Francis Picus Mirandola with having introduced into a poem, where he describes the wars of Christians against Christians, all the divinities of paganism, and having mixed up Apollo, Diana, and Mercury, with the pope, the electors, and the emperor, distinctly maintained that, without this, it would not have been a poem, —in proof of which he alleged this strange reason, that the poems of Hesiod, of Homer, and of Virgil, are full of the names and the fables of these gods; whence he concluded that he might be allowed to do the same.

These bad reasonings are often imperceptible to those who make them, and deceive them first. They are deafened by the sound of their own words, dazzled with the lustre of their figures; and the grandeur of certain words attaches them unconsciously to thoughts of little solidity, which they would doubtless have rejected had they exercised a little reflection.

It is probable, for instance, that it was the word vestal which pleased an author of our time, and which led him

to say to a young lady, to prevent her from being ashamed of knowing Latin, that she need not blush to speak a language which had been spoken by the vestals. For, if he had considered this thought, he would have seen that he might as justly have said to that lady that she ought to blush to speak a language which had been formerly spoken by the courtezans of Rome, who were far more numerous than the vestals; or that she ought to blush to speak any other language than that of her own country, since the ancient vestals spoke only their natural language. All these reasonings, which are worth nothing, are as good as that of this author; and the truth is, that the vestals have nothing to do with justifying or condemning maidens who learn Latin.

The false reasonings of this kind, which are met with continually in the writings of those who most affect eloquence, show us how necessary it is for the majority of those who write or speak to be thoroughly convinced of this excellent rule,—*that there is nothing beautiful except that which is true;* which would take away from discourse a multitude of vain ornaments and false thoughts. It is true that this precision renders the style more dry, and less pompous; but it also renders it clearer, more vigorous, more serious, and more worthy of an honourable man. The impression which it makes is less strong, but much more lasting; whereas that produced by these rounded periods is so transient, that it passes away almost as soon as we have heard them.

III.

It is a very common defect amongst men to judge rashly of the actions and intentions of others, and they almost always fall into it by a bad reasoning, through which, in not recognising with sufficient clearness all the causes which might produce any effect, they attribute that effect definitely to one cause, when it may have been produced by many others; or, again, suppose that a cause, which has accidentally, when united with many circumstances, produced an effect on one occasion, must do so on all occasions.

A man of learning is found to be of the same opinion with

a heretic, in a matter of criticism, independent of religious controversies: A malicious adversary concludes from this that he is favourable to heretics; but he concludes this rashly and maliciously, since it is perhaps reason and truth which have led him to adopt that opinion.

A writer may speak with some strength against an opinion which he believes to be dangerous: he will, from this, be accused of hatred and animosity against the authors who have advanced it; but he will be so unjustly and rashly, since this earnestness may arise from zeal for the truth, just as well as from hatred of the men who oppose it.

A man is the friend of a vicious man: it is, therefore, concluded that he approves of his conduct, and is a partaker in his crimes. This does not follow,—perhaps he knows nothing about them,—perhaps he has no part in them.

We fail to render true civility to those to whom it is due: we are said to be proud and insolent,—but this was perhaps only an inadvertence or simple forgetfulness. All exterior things are but equivocal signs, that is to say, signs which may signify many things, and we judge rashly when we determine this sign to mean a particular thing, without having any special reason for doing so. Silence is sometimes a sign of modesty and wisdom, and sometimes of stupidity. Slowness sometimes indicates prudence, and sometimes heaviness of mind. Change is sometimes a sign of inconstancy, and sometimes of sincerity. Thus it is bad reasoning to conclude that a man is inconstant, simply from the fact that he has changed his opinion; for he may have had good reason for changing it.

IV.

The false inductions by which general propositions are derived from some particular experiences, constitute one of the most common sources of the false reasonings of men. Three or four examples are enough to make a maxim and a common place, which they then employ as a principle for deciding all things.

There are many maladies hidden from the most skilful

physicians, and remedies often do not succeed: rash minds, hence, conclude, that medicine is absolutely useless, and only a craft of charlatans.

There are light and loose women: this is sufficient for the jealous to conceive unjust suspicions against the most virtuous, and for licentious writers to condemn all universally.

There are some persons who hide great vices under an appearance of piety; libertines conclude from this that all devotion is no better than hypocrisy.

There are some things obscure and hidden, and we are often grossly deceived: all things are obscure and uncertain, say the ancient and modern Pyrrhonists, and we cannot know the truth of anything with certainty.

There is a want of equality in some of the actions of men, and this is enough to constitute a common place, from which none are exempt. "Reason," say they, "is so weak and blind, that there is nothing so evidently clear as to be clear enough for it; the easy and the hard are both alike to it; all subjects are equal, and nature, in general, disclaims its jurisdiction. We only think what we *will* in the very moment in which we *will* it;—we will nothing freely, nothing absolutely, nothing constantly."

Most people set forth the defects or good qualities of others, only by general and extreme propositions. From some partial actions we infer a habit: from three or four faults we conclude a custom; and what happens once a month or once a year, happens every day, at every hour, and every moment, in the discourses of men, so little pains do they take to observe in them the limits of truth and justice.

V.

It is a weakness and injustice which we often condemn, but which we rarely avoid, to judge of purposes by the event, and to reckon those who had taken a prudent resolution according to the circumstances, so far as they could see them, guilty of all the evil consequences which may have happened therefrom, either simply through accident, or through the malice of others who had thwarted it,

or through some other circumstances which it was impossible for them to foresee.

Men not only love to be fortunate as much as to be wise, but they make no distinction between the fortunate and the wise, nor between the unfortunate and the guilty. This distinction is too subtile for them. We are ingenious in finding out the faults which we imagine have produced the want of success; and as astrologers, when they know a given event, fail not to discover the aspect of the stars which produced it, so also we never fail to find, after disgraces and misfortune, that those who have met with them have deserved them by some imprudence. He is unsuccessful, therefore he is in fault. In this way the world reasons, and in this way it has always reasoned, because there has always been little equity in the judgments of men, and because, not knowing the true causes of things, they substitute others according to the event, by praising those who are successful, and blaming those who are not.

VI.

But there are no false reasonings more common amongst men than those into which they fall, either by judging rashly of the truth of things from some authority insufficient to assure them of it, or by deciding the inward essence by the outward manner. We call the former the *sophism of authority*, the latter the *sophism of the manner*.

To understand how common these are, it is only necessary to consider that the majority of men are determined to believe one opinion rather than another, not by any solid and essential reasons which might lead them to know the truth, but by certain exterior and foreign marks which are more consonant to, or which they judge to be consonant to, truth, than to falsehood.

The reason of this is, that the interior truth of things is often deeply hidden; that the minds of men are commonly feeble and dark, full of clouds and false light, while their outward marks of truth are clear and sensible; so that, as men naturally incline to that which is easiest, they almost always range themselves on the side where they see those exterior marks of truth which are readily discovered.

These may be reduced to two principles,—the authority of him who propounds the thing, and the manner in which it is propounded. And these two ways of persuading are so powerful that they carry away almost all minds.

Wherefore God, who willed that the sure knowledge of the mysteries of faith might be attained by the simplest of the faithful, has had the condescension to accommodate himself to this weakness of the spirit of man, in not making this to depend on the particular examination of all the points which are proposed to faith; but in giving us, as the certain rule of truth, the authority of the church universal, which proposes them, which, being clear and evident, relieves the mind of the perplexities which necessarily arise from the particular discussion of these mysteries.

Thus, in matters of faith, the authority of the church universal is entirely decisive; and so far is it from being possible that it should be liable to error, that we fall into it only when wandering from its authority, and refusing to submit ourselves to it.

We may derive, moreover, convincing arguments in matters of religion from the manner in which they are advanced. When we see, for example, in different ages of the church, and principally in the last, men who endeavour to propagate their opinions by bloodshed and the sword; when we see them arm themselves against the church by schism, against temporal powers by revolt; when we see people without the common commission, without miracles, without any external marks of piety, and with the plain marks rather of licentiousness, undertake to change the faith and discipline of the church in so criminal a manner, it is more than sufficient to make reasonable men reject them, and to prevent the most ignorant from listening to them.

But in those things, the knowledge of which is not absolutely necessary, and which God has left more to the discernment of the reason of each one in particular, the authority and the manner are not so important, and they often lead many to form judgments contrary to the truth.

We do not undertake to give here the rules and the precise limits of the respect which is due to authority in human things, we simply indicate some gross faults which are committed in this matter.

We often regard only the number of the witnesses, without at all considering whether the number increases the probability of their having discovered the truth, which is, however, unreasonable; for, as an author of our time has wisely remarked, in difficult things, which each must discover for himself, it is more likely that a single person will discover the truth than that many will. Thus the following is not a valid inference: this opinion is held by the majority of philosophers; it is, therefore, the truest.

We are often persuaded, by certain qualities which have no connection with the truth, of the things which we examine. Thus there are a number of people who trust implicitly to those who are older, and who have had more experience, even in those things which do not depend on age or experience, but on the clearness of the mind.

Piety, wisdom, moderation, are, without doubt, the most estimable qualities in the world, and they ought to give great authority to those who possess them in those things which depend on piety or sincerity, and even on the knowledge of God, for it is most probable that God communicates more to those who serve him more purely; but there are a multitude of things which depend only on human intelligence, experience, and penetration, and, in these things, those who have the superiority in intellect and in study, deserve to be relied on more than others. The contrary, however, often happens, and many reckon it best to follow, even in these things, the most devout men.

This arises, in part, from the fact that these advantages of mind are not so obvious as the external decorum which appears in pious persons, and in part, also, from the fact that men do not like to make these distinctions. Discrimination perplexes them; they will have all or nothing. If they trust to a man in one thing, they will trust to him in everything; if they do not in one, they will not in any; they love short, plain, and easy ways. But this disposition, though common, is, nevertheless, contrary to reason, which shows us that the same persons are not to be trusted to in anything, because they are not distinguished in anything; and that it is bad reasoning to conclude—he

is a serious man, therefore he is intelligent and clever in everything.

VII.

It is true, indeed, that if any errors are pardonable, those into which we fall through our excessive deference to the opinion of good men, are among the number. But there is a delusion much more absurd in itself, but which is, nevertheless, very common, that, namely, of believing that a man speaks the truth because he is a man of birth, of fortune, or high in office.

Not that any formally make these kinds of reasonings—he has a hundred thousand livres a year; therefore, he possesses judgment: he is of high birth; therefore, what he advances must be true: he is a poor man; therefore, he is wrong. Nevertheless, something of this kind passes through the minds of the majority, and, unconsciously, bears away their judgment.

Let the same thing be proposed by a man of quality, and by one of no distinction, and it will often be found that we approve of it in the mouth of the former, when we scarcely condescend to listen to it in that of the latter. Scripture designed to teach us this disposition of men, in that perfect representation which is given of it in the book of Ecclesiasticus.* "When the rich man speaks, all are silent, and his words are raised to the skies; if the poor man speaks, the inquiry is, Who is this?" *Dives locutus est, et omnes tacuerunt, et verbum illius usque ad nubes perducent; pauper locutus est, et dicunt, Quis est hic?*

It is certain that complaisance and flattery have much to do with the approbation which is bestowed on the actions and words of people of quality; as also that they often gain this by a certain outward grace, and by a noble, free, and natural bearing, which is sometimes so distinctive that it is almost impossible for it to be imitated by those who are of low birth. It is certain, also, that there are many who approve of everything which is done and said by the great, through an inward abasement of soul, who bend

* Eccles. xiii. 23.

under the weight of grandeur, and whose sight is not strong enough to bear its lustre; as, indeed, that the outward pomp which environs them always imposes a little, and makes some impression on the strongest minds.

This illusion springs from the corruption of the heart of man, who, having a strong passion for honours and pleasures, necessarily conceives a great affection for the means by which these honours and pleasures are obtained. The love which we have for all those things which are valued by the world, makes us judge those happy who possess them, and, in thus judging them happy, we place them above ourselves, and regard them as eminent and exalted persons. This habit of regarding them with respect passes insensibly from their fortune to their mind. Men do not commonly do things by halves; we, therefore, give them minds as exalted as their rank—we submit to their opinions; and this is the reason of the credit which they commonly obtain in the affairs which they manage.

But this illusion is still stronger in the great themselves, when they have not laboured to correct the impression which their fortune naturally makes on their minds, than it is in their inferiors. Some derive from their estate and riches a reason for maintaining that these opinions ought to prevail over those who are beneath them. They cannot bear that those people whom they regard with contempt should pretend to have as much judgment and reason as themselves, and this makes them so impatient of the least contradiction. All this springs from the same source, that is, from the false ideas which they have of their grandeur, nobility, and wealth. Instead of considering them as things altogether foreign from their character, which do not prevent them at all from being perfectly equal to all the rest of men, both in mind and body, and which do not prevent their judgment even from being as weak and as liable to be deceived as that of all others, they, in some sort, incorporate with their very essence, all these qualities of grand, noble, rich, master, lord, prince, —they exaggerate their idea with these, and never represent themselves to themselves without all their titles, their equipage, and their train.

They are accustomed from their infancy to consider

themselves as of a different species from other men—they never mingle in imagination with the mass of human kind; they are, in their own eyes, always counts or dukes, and never simply men. Thus they shape themselves a soul and judgment according to the measure of their fortune, and believe themselves as much above others in mind as they are above them in birth and fortune.

The folly of the human mind is such, that there is nothing which may not serve to aggrandize the idea which it has of itself. A beautiful horse, grand clothes, a long beard, make men consider themselves more clever; and there are few who do not think more of themselves on horseback or in a coach than on foot. It is easy to convince everybody that there is nothing more ridiculous than these judgments, but it is very difficult to guard entirely against the secret impression which these outward things make upon the mind. All that we can do is to accustom ourselves as much as possible to give no influence at all to those qualities which cannot contribute towards finding the truth, and to give it even to those which do thus contribute only so far as they really contribute to it. Age, knowledge, study, experience, mind, energy, memory, accuracy, labour, avail to find the truth of hidden things, and these qualities, therefore, deserve to be respected; but it is always necessary to weigh with care, and then to make a comparison with the opposite reasons; for, from separate individual things we can conclude nothing with certainty, since there are very false opinions which have been sanctioned by men of great mental power, who possessed these qualities to a great extent.

VIII.

There is something still more deceptive in the mistakes which arise from the *manner*, for we are naturally led to believe that a man possesses judgment when he speaks with grace, with ease, with gravity, with moderation, and with gentleness; and, on the contrary, that a man is in the wrong when he speaks harshly, or manifests anything of passion, acrimony, or presumption, in his actions and words.

Nevertheless, if we judge of the essence of things by

these outward and sensible appearances, we must be often deceived; for there are many people who utter follies gravely and modestly; and others, on the contrary, who, being naturally of a quick temper, or under the influence even of some passion, which appears in their countenance or their words, have, nevertheless, the truth on their side. There are some men of very moderate capacity, and very superficial, who, from having been nourished at court, where the art of pleasing is studied and practised better than anywhere else, have very agreeable manners, by means of which they render many false judgments acceptable; and there are others, on the contrary, who, having nothing outward to recommend them, have, nevertheless, a great and solid mind within. There are some who speak better than they think, and others who think better than they speak. Thus reason regards those who possess it, judging not by these outward things, and does not hesitate to yield to the truth, not only when it is proposed in ways that are offensive and disagreeable, but even when it is mingled with much of falsehood, for the same person may speak truly in one thing, and falsely in another; may be right in one thing, and wrong in another.

It is necessary, therefore, to consider each thing separately, that is to say, we must judge of the manner by the manner, and the matter by the matter, and not the matter by the manner, nor the manner by the matter. A man does wrong to speak with anger, and he does right to speak the truth; and, on the contrary, another is right in speaking calmly and civilly, and he is wrong in advancing falsehoods.

But as it is reasonable to be on our guard against concluding that a thing is true or false, because it is proposed in such a way, it is right, also, that those who wish to persuade others of any truth which they have discovered, should study to clothe it in the garb most suitable for making it acceptable, and to avoid those revolting ways of stating it, which only lead to its rejection.

They ought to remember that when we seek to move the minds of people, it is a small thing that we have right on our side; and it is a great evil to have only right, and not to have also that which is necessary for making it relished.

If they seriously honour the truth, they ought not to dishonour it by covering it with the marks of falsehood and deceit; and if they love it sincerely, they ought not to attach to it the hatred and aversion of men, by the offensive way in which they propound it. It is the most important, as well as the most useful, precept of rhetoric, that it behoves us to govern the spirit as well as the words; for although it is a different thing to be wrong in the manner from being wrong in the matter, the faults, nevertheless, of the manner are often greater and more important than those of the matter.

In reality, all these fiery, presumptuous, bitter, obstinate, passionate manners, always spring from some disorder of the mind, which is often more serious than the defect of intelligence and of knowledge, which we reprehend in others; and it is, indeed, always unjust to seek to persuade men in this way; for it is very right that we should lead them to the truth when we know it; but it is wrong to compel others to take, as true, everything that we believe, and to defer to our authority alone. We do this, however, when we propose the truth in this offensive manner. For the way of speaking generally enters into the mind before the reasons, since the mind is more prompt to notice the manner of the speaker than it is to comprehend the solidity of his proofs, which are often, indeed, not comprehended at all. Now the manner of the discourse being thus separated from the proofs, marks only the authority which he who speaks arrogates to himself; so that if he is bitter and imperious, he necessarily revolts the minds of others, since he appears to wish to gain, by authority, and by a kind of tyranny, that which ought only to be obtained by persuasion and reason.

This injustice is still greater when we employ these offensive ways in combating common and received opinions; for the judgment of an individual may indeed be preferred to that of many when it is more correct, but an individual ought never to maintain that his authority should prevail against that of all others.

Thus, not only modesty and prudence, but justice itself, obliges us to assume a modest air when we combat common opinions or established authority, otherwise we cannot

escape the injustice of opposing the authority of an individual to an authority either public, or greater, and more widely established than our own. We cannot exercise too much moderation when we seek to disturb the position of a received opinion or of an ancient faith. This is so true, that St Augustine extended it even to religious truths, having given this excellent rule to all those who have to instruct others:—

"Observe," says he, "in what way the wise and religious catholics taught that which they had to communicate to others. If they were things common and authorised, they propounded them in a manner full of assurance, and free from every trace of doubt by being accompanied with the greatest possible gentleness; but if they were extraordinary things, although they themselves very clearly recognised their truth, they still proposed them rather as doubts and as questions to be examined, than as dogmas and fixed decisions, in order to accommodate themselves in this to the weakness of those who heard them." That if a truth is so high that it is above the strength of those to whom it is spoken, they prefer rather to keep it back for a while, in order to give time for growth, and for becoming capable of receiving it, than to make it known to them in that state of weakness in which it would have overwhelmed them.

FOURTH PART.

OF METHOD.

It remains that we explain the last part of logi
lating to method—which is, without doubt, one
useful and most important. We have thought
unite with it what belongs to demonstration, bec
does not commonly consist of a single argument,
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CHAPTER I.

OF KNOWLEDGE—THAT THERE IS SUCH
THE THINGS WHICH WE KNOW BY THE
CERTAIN THAN THOSE WHICH WE KNO
—THAT THERE ARE THINGS WHICH TH
INCAPABLE OF KNOWING.—THE USE
WHICH WE MAY TURN THIS NECESSARY

If, when we consider any maxim, we r
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f any other reason, this kind of knowledge is
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render it so, and this motive is either authority
f it is authority which leads the mind to embrace
posed to it, this is what is called *faith.* If it is
either this reason does not produce complete
but leaves still some doubt, and this acqui-
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reason produces complete conviction ; and then,
clear only in appearance, and requires attention,
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e ; or, at least, a rash judgment, if, being true in
, nevertheless, had not sufficient reason for be-
t to be true.

this reason is not only apparent, but weighty and
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a stronger persuasion, and by a quality of
is more vivid and penetrating, than the
this reason produces, is called *knowledge*,
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is, that all these opinions, which have
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scourses, disputes, or writings, and no
n seriously convinced of them. They
rt and amusement of unoccupied and in-

genious persons; but never the feelings of which they were inwardly and deeply conscious, and by which they endeavoured to conduct their life. Hence the best means of convincing these philosophers would be to refer them to their conscience and good faith, and to require from them, whether, after all these discourses, in which they had laboured to prove that it is impossible to distinguish sleep from waking, or madness from sound mindedness, they were not persuaded, despite their argument, that they did not sleep, and were of a sound mind. And if they had had any sincerity, they would have denied all their vain subtilties, by avowing freely that they had never been able to believe these things when they had tried to do so.

And if any one were found who could entertain a doubt as to whether he were awake or sane, or able even to believe that the existence of all external things was uncertain,—being in doubt as to the existence of a sun, a moon, or of matter,—no one could, however, be found to doubt, as St Augustine says, that he *is*, that he *thinks*, that he *lives*. For whether he were asleep or awake, whether he were of a diseased or sound mind, whether he were deceived or not deceived, he is at all events certain, inasmuch as he thinks, that he exists, and that he lives; since it is impossible to separate being and life from thought, and to believe that what thinks neither exists nor lives. And from this clear, certain, and indubitable knowledge, he may form a rule for accepting as true all thoughts which he may find as clear as this one appears to be.

It is equally impossible to doubt our perceptions when we separate them from their objects. Thus, whether there be such things as the sun and the earth or not, I am certain that I *imagine* I see them. I am certain that I doubt when I doubt,—that I believe I see, when I believe I see,—that I believe I hear, when I believe I hear, and so of the rest. So that, restricting ourselves to the mind alone, and considering its modifications, we find a vast number of clear cognitions, whose truth it is impossible to doubt.

This consideration may enable us to decide another question which has arisen in relation to this subject,—to wit, whether the things which we know only through

the mind are more or less certain than those which we know through the senses? For it is clear from what we have said above, that we are more assured of those perceptions and ideas which we discover only by a mental reflection, than we are of any of the objects of sense. We may say further, that while the senses do not always deceive us in the report which they give, our assurance, nevertheless, that they do not deceive, arises, not from the senses themselves, but from a reflection of the mind, through which we discern when we ought to believe, and when we ought not to believe, the senses.

And hence it must be confessed that St Augustine had good ground to maintain, after Plato, that the determination of truth, and the rule for its discernment, belong not to the senses, but to the mind:—*Non est judicium veritatis in sensibus;* and also, that the certainty which may be derived from the senses is of no great extent,—there being many things which we imagine ourselves to know through sense, of which we cannot affirm that we have a complete assurance.

For example, we may know through sense that one body is larger than another body, but we cannot know with certainty what is the true and natural size of each body. To understand this, it is only necessary to consider that if we had never seen external objects in any other way than through the medium of magnifying glasses, it is certain that we should have figured to ourselves bodies, and all the measurements of bodies, according to that size only in which they had appeared to us through these glasses. Now our eyes themselves are glasses, and we do not know exactly whether they may not diminish or augment the objects which we behold, or whether these artificial glasses, which we imagine diminish or augment them, may not, on the contrary, represent their true size. And, therefore, we do not know the natural and absolute size of any body.

We do not know, either, whether our perception of the size of objects is the same as that of others; for although two persons may agree together in their measurement, that a given body, for example, is only five feet, yet, nevertheless, that which the one conceives to be a foot may not be

the same as that which the other does; for they each conceive what their eyes severally represent to them. Now it may be that the eyes of one do not represent the same thing to him which the eyes of others do to them, because they are glasses differently cut.

This diversity, however, is probably not great, because we do not perceive any difference in the conformation of the eye sufficient to produce any remarkable change; besides which, though our eyes are glasses, they are, however, glasses cut by the hand of God: so that we have good ground for believing that they represent, for the most part, the truth of objects, except when their natural figure is injured or disturbed by some defect.

However this may be, though the judgment of the size of objects be to some extent uncertain, this is not very important, and we are not from it to conclude that there is no certainty in any of the other representations of sense; for, though I may not know exactly, as I have said, what is the natural and absolute size of an elephant, I do know, however, that he is greater than a horse, and less than a whale; which is sufficient for all the purposes of life.

There is, therefore, certainty and uncertainty both in the mind and in the senses; and it would be an equal mistake to maintain that all things should be considered either as certain or uncertain.

Reason, on the other hand, compels us to acknowledge, in relation to this, three degrees.

For there are some things which we may know clearly and certainly. There are others which we cannot know with the clearness of truth, but to the knowledge of which we may hope to arrive. And, finally, there are some which it is impossible to know with certainty, either because we have not the principles which would lead us to them, or because they are too disproportionate to our minds.

The first kind comprehends all that we know through demonstration, or through intelligence.

The second is the matter of the study of philosophers. But they may spend their time uselessly, if they do not know how to distinguish these from the third,—that is to say, if they cannot discern the things at the knowledge of

which the mind may arrive, from those which it is incapable of reaching.

The shortest method which can be found in the study of the sciences, is that of never engaging in the search after any of those things which are above us, and which we cannot reasonably hope to be able to comprehend. Of this kind are all the questions which relate to the power of God, and generally all that belongs to the infinite, which it is absurd to attempt to reduce within the limits of our mind; for our mind, being finite, is lost and confounded in the infinite, and remains overwhelmed with the multitude of conflicting thoughts which it furnishes.

This is the shortest and most convenient solution which can be given of a great number of questions, on which we may dispute for ever, because we can never attain to any knowledge of them sufficiently clear to fix and hold our minds. Is it possible for a creature to have been created from eternity? Can God make a body infinite in size?—a movement infinite in swiftness?—a multitude infinite in number? Is an infinite number even, or uneven? Is one infinite greater than another? He who should say at once, I know nothing about these things, will have advanced as far in a moment, as he who should have spent twenty years in reasoning on them; and the only difference there would be between them is, that he who had laboured to solve these questions is in danger of falling into a lower state than that of simple ignorance, which is that of believing himself to know what he does not.

There are also a great number of metaphysical questions, which are too vague, too abstract, and too far removed from clear and well-known principles, to be ever resolved; and the best way is for us to have as little to do with them as we can; and, after having learned, in general, what they are, to resolve boldly to be ignorant of them.

Nescire quædam, magna pars sapientiæ.

In this way, by freeing ourselves from inquiries in which it is impossible to succeed, we shall be able to make more progress in those which are adapted to the capacity of our mind.

But it must be remarked that there are some things

which are incomprehensible in their *manner*, but which are certain in their *existence*. We are unable to conceive *how they can be*, while it is certain, nevertheless, *that they are*.

What is more incomprehensible than eternity, and what, at the same time, is more certain? So that those even, who, through an awful blindness, have destroyed in their mind the knowledge of God, are obliged to attribute it to the most vile and contemptible of all things, which is matter.

How can we comprehend that the smallest grain of matter is infinitely divisible, and that we can never reach a part so small, but that it not only contains many others, but also an infinity; that the smallest grain of wheat contains in itself as many parts, though proportionally smaller, as the whole world,—that all imaginable forms are actually found in it, and that it contains in itself a small world, with all its parts—a sun, a heaven, stars, planets—a world with admirable exactness of proportions,—and that there are none of the parts of that grain which do not still themselves contain a proportional world? What must be the part in so small a world which answers to the size of a grain of wheat? and what a tremendous difference must there be, in order that we may be able to say truly, that what a grain of wheat is in relation to the whole world, that part is in relation to a grain of wheat? Nevertheless that part, whose littleness is already incomprehensible to us, contains still another world proportional; and so on to infinity, without our being able to find any which has not as many relative parts as the whole world, however numerous these may be.

All these things are inconceivable; and they must, nevertheless, necessarily be so, since we can demonstrate the divisibility of matter to infinity, and since geometry has furnished us with proofs of it, as plain as those of any of the truths which it reveals to us.

For this science shows us that there are certain lines which have no common measure, and which are called, for this reason, incommensurable, as the diagonal of a square, and the sides. Now, if this diagonal and the sides were composed of a certain number of indivisible parts, one of these indivisible parts would be the common measure of these two lines, and, consequently, these two lines

cannot be composed of a certain number of indivisible parts.

It is demonstrated, again, by this science, that it is impossible for a square number to be double of another square number, while, however, it is very possible that an extended square may be double of another extended square. Now, if these two extended squares were composed of a certain number of ultimate parts, the large square would contain double the parts of the small one, and both being squares, there would be a square number double another square number, which is impossible.

Finally, there is nothing more clear than this principle, that two non-extensions cannot form an extension, and that an extended whole has parts. Now, taking two of these parts, which we assume to be indivisible, I ask, whether these have extension, or whether they have not? If they have, they are therefore divisible, and have many parts; if they have not, they are two negations of extension, and thus it is impossible for them to constitute an extension.

We must renounce human certainty before we can doubt the truth of these demonstrations; but to help us to conceive, as far as is possible, this infinite divisibility of matter, I have added yet another proof, which shows us at the same time a division to infinity, and a motion which slackens to infinity, without ever arriving at rest.

It is certain that, though we may doubt whether extension be divisible to infinity, we cannot, at all events, doubt that it may be augmented to infinity, and that to a plain of a hundred thousand leagues we may join another of a hundred thousand leagues, and so on to infinity. Now this infinite augmentation of extension proves its infinite divisibility; and in order to comprehend this, we have only to imagine a level sea which extends infinitely in length, and a vessel on the shore of that sea, which sets out from port in a straight line. It is certain that to any one looking from the port at the hull of the vessel reflected through a glass, or any other diaphanous body, the ray which terminates at the base of that vessel will pass through a certain point of the glass, and that the horizontal ray will pass through another point of the glass higher than the first. Now, in proportion as the vessel

moves away, the point of the ray which terminated at the base of the vessel will always ascend, and will infinitely divide the space which is between the two points; and the further the vessel goes, the slower it will ascend, without ever ceasing to rise, and without ever arriving at the point of the horizontal ray, because the two lines, intersecting each other in the eye, could never be either parallel or in the same line. Thus this example furnishes at once the proof of a division to infinity of extension, and of a diminution to infinity of motion.

It is through this infinite diminution of extension, which arises from its divisibility, that we are able to prove these problems, which appear impossible from the terms:—To find an infinite space equal to a finite space, or which may be only the half or the third, &c., of a finite space. We may resolve them in different ways; and the following is one, clumsy enough, but very easy:—If we take the half of a square, and the half of that half, and so on to infinity, and then join all these halves together by their longest line, we shall form from them an area of an irregular figure, which will always diminish to infinity at one of the ends, and which will be equal to the whole square; for the half, and the half of that half plus the half of that second half, and so on to infinity; the third, and the third of the third, and so on to infinity, constitute a half. The fourths, taken in the same way, make the third, and the fifths the fourth. By joining the ends of these thirds or these fourths, we shall make from them a figure which will contain the half or the third of the whole area, which will be infinite in length on one side, while diminishing continually in breadth.

The advantage which may be derived from these speculations is not simply the acquisition of these knowledges, which are in themselves barren enough, but in teaching us to know the true limits of our mind, and in making us confess, whether we will or no, that there are some things which exist although we are not able to comprehend them; and hence it is well for a man to weary himself with these subtilties, in order to check his presumption, and to take away from him the boldness which would lead him to oppose his feeble intelligence to the truths which the

church proposes to him, under the pretext that he cannot understand them; for, since the strength of the human mind is compelled to bow before the smallest atom of matter, and to confess that it clearly sees that it is infinitely divisible, without being able to comprehend how this can be, it is manifest that we sin against reason in refusing to believe the marvellous effects of the omnipotence of God (which is in itself incomprehensible), because our mind is unable to comprehend them.

But as it is profitable for the mind sometimes to be led to feel its own feebleness, through the consideration of those objects which are above it, and which, being above it, abase and humble it, it is certain, also, that we must endeavour to choose, for our ordinary occupation, subjects and matters which may be more adapted to our capacity, and whose truth we may be able to discover and comprehend. This is done, either by proving effects through their causes, which is called proving *a priori*, or by demonstrating, on the contrary, causes through their effects, which is called proving *a posteriori*. It is necessary to extend these terms a little, in order to bring under them all kinds of demonstrations; but it was well to notice them in passing, that we may understand them, and that we may *not* be surprised when we meet with them in the books or in the discourses of philosophy; and since these reasons are commonly composed of many parts, it is necessary, in order to render them clear and conclusive, to dispose them in a certain order and method. Of this method we shall treat in the greater part of the present book.

CHAPTER II.

OF THE TWO KINDS OF METHOD—ANALYSIS AND SYNTHESIS. EXAMPLE OF ANALYSIS.

METHOD may be called, in general, *the art of disposing well a series of many thoughts, either for the discovering truth when*

we are ignorant of it, or for proving it to others when it is already known.

Thus there are two kinds of method, one for discovering truth, which is called *analysis*, or *the method of resolution*, and which may also be called *the method of invention*; and the other for explaining it to others when we have found it, which is called *synthesis*, or *the method of composition*, and which may be also called the *method of doctrine*. We do not commonly treat of the entire body of a science by analysis, but employ it only to resolve some question.*

All questions are either of words or things.

By *questions of words* we here mean, not those in which we inquire into words, but those in which, through the words, we inquire into things, as those in which we engage to find the sense of an enigma, or to explain, from obscure or ambiguous words, what is the true meaning of an author.

Questions of things may be reduced to four principal kinds: the first is, *when we seek causes through effects*. We know, for example, the different effects of the loadstone—we inquire into the cause of these; we know the different effects which are commonly attributed to the abhorrence of a vacuum—we inquire whether that is the true cause, and we have found that it is not; we know the ebb and flow of the sea—we ask what can be the cause of a motion so great and so regular.

The second is, *when we seek effects through causes*. It was always, for example, known that wind and water possessed great power over the movements of bodies; but the ancients, not having sufficiently examined what effects might flow from these causes, did not apply them as they have since been applied, by means of mills, to a great number of purposes very useful to society, which wonderfully lessen the labour of men, which ought to be the result of true physics: so that we may say that the first kind of questions in which we seek causes through effects, constitute the speculative part of physics; and the second kind, in which we seek effects by causes, the practical.

The third kind of questions is, *when through the parts we*

* The greater part of what is here said of questions is taken from a MS. of the late M. Descartes, which M. Clercelier had the goodness to lend me.

seek the whole: as when, having many numbers, we seek their sum by adding them together; or when, having two, we seek their product by multiplying them together.

The fourth is, *when, having the whole and some part, we seek another part;* as when, having one number and another which is to be subtracted from it, we seek what remains; or when, having a number, we seek what such a part of it will be.

But it must be remarked that, in order to extend further the two last kinds of questions, and in order that we may comprehend what cannot be properly brought under the two first, it is necessary to take the word part in its most general signification for all which a thing comprises—its modes, its extremities, its accidents, its properties, and, in general, all its attributes, so that, for example, we shall seek the whole by its parts when we seek to find the area of a triangle from its height and base, and we shall, on the contrary, seek a part by the whole, and another part when we seek to find the side of a rectangle from knowing its area and one of its sides.

Now, whatever may be the nature of the question which we propose to resolve, the first thing which we must do is to conceive, accurately and distinctly, precisely what it is we are seeking, that is, what is the precise point of the question.

For we must avoid what happens to some, who, by a precipitation of mind, engage in the resolution of what is proposed to them before having sufficiently considered by what signs or marks they might recognise what they seek for if they met with it, as a valet, who, when commanded by his master to fetch one of his friends, should hurry away before having learnt more particularly from his master who that friend was.

Now, although in every question there is something unknown, otherwise there would be nothing to seek, it is, nevertheless, necessary that even that which is unknown should be marked out and designated by certain conditions which may determine us to seek one thing rather than another, and which may enable us to judge, when we have found it, that it is the thing of which we were in search.

And these conditions ought to be well considered beforehand, that we may not add anything which is not contained

in that which is proposed, and that we may not omit anything which it does contain, for we may sin in both these ways.

We should sin in the first way, if when, for example, we were asked what animal that is which goes in the morning on four feet, at mid-day on two, and in the evening on three, we believed ourselves obliged to take all these words, feet, morning, middle-day, evening, in their strict and literal meaning; for he who proposes this enigma has not laid it down as a condition that we must take them in this way, but it is sufficient that these words may, by metaphor, be referred to other things, and thus that question is properly resolved when we say that that animal is man.

Suppose, again, that we were asked by what artifice the figure of a Tantalus could have been made, which, lying on a column in the midst of a vase in the posture of a man who bent down to drink, was never able to do so, because the water, though able to rise very well in the vase up to his mouth, as soon as it reached his lips all flowed away, until none was left in the vase. We should sin by adding conditions which would not at all contribute towards the solution of this question, if we were to busy ourselves in seeking after some secret wonder in the figure of this Tantalus, which caused the water to flow away as soon as it had touched his lips—for this is not involved in the question—and if we would conceive it aright, we ought to reduce it to these terms:—To make a vase which would hold water so long as it was filled to a certain height, and which would let it all flow away again if it were filled beyond. And this is very easy, for we need only hide in the column a syphon which has one small opening below, through which the water enters, and the longer leg of which has an opening below the foot of the vase; so long as the water which we put in the vase does not reach the height of the syphon it will remain there, but when it reaches it, it will all flow away through the longer leg of the syphon, which is hidden below the foot of the vase.

It is asked, again, What could be the secret of that water drinker who exhibited himself at Paris twenty years ago, and how it could be that in throwing out water from his mouth he filled, at the same time, five or six different glasses with water of different colours? If we imagine that

these waters of different colours were in his stomach, and he separated them in throwing them up, one into one glass and another into another, we should inquire after a secret which we could never find, since it is not possible; whereas we ought to inquire only how water coming at the same time from the same mouth appeared of different colours in each of these glasses, and it is very likely that this would be from some tincture that he had placed at the bottom of each of these glasses.

It is also an artifice of those who propose questions which they do not wish should be easily resolved, to surround that which is to be found with so many conditions which are useless, and which do not contribute anything to its discovery, that we cannot easily detect the true point of the question, and that we thus lose time, and uselessly weary the mind in keeping its attention fixed on things which do not at all contribute to resolve it.

The other way in which we sin in the examination of the conditions of what we seek, is, when we omit some things which are essential to the question proposed. It is proposed, for example, to find, by art, perpetual motion; for we know well that there are some which are perpetual in nature, such as the movements of fountains, of rivers, of seas. There are some who, having imagined that the earth turns on its centre, and that it is only a great magnet, of which the loadstone has all the properties, have also believed that we might dispose a magnet so that it would always turn circularly; but even if this were so, we should not then solve the problem of finding, by art, perpetual motion, since that motion would be as natural as that of a wheel exposed to the current of a river.

When, therefore, we have well examined the conditions which designate and mark out what is unknown in the question, we must then examine what is known, since it is through this that we must arrive at the knowledge of what is unknown; for we need not imagine that we shall find a new kind of being, inasmuch as our intelligence can go no further than the recognition that what we seek participates in such and such a way in the nature of things already known. If, for example, a man were blind from birth, it would be in vain to seek after arguments and

proofs to convey to him the true idea of colours such as we possess through sense; and so, if the magnet about which we interrogate nature, were a new kind of being, the like of which our mind had never conceived, we could never attain to the knowledge of it by reasoning, for we should need for this a different mind from our own. And so we ought to believe that we have found all that can be found by the human mind, if we can distinctly conceive such a mixture of the beings and natures which are known to us as may produce all the effects which we see in the magnet.

Now it is in the attention we give to that which is known in the question we wish to resolve, that analysis mainly consists, the whole art being to derive, from this examination, many truths which may conduct us to the knowledge of what we seek.

As, suppose it be asked *whether the soul of man is immortal*, and that, in order to discover this, we apply ourselves to consider the nature of the soul, we remark, in the first place, respecting it, that it is the property of the soul to think, and that it may doubt of everything else without being able to doubt whether it thinks, since doubt itself is a thought. We then inquire what it is to think, and finding that nothing is contained in the idea of thought which belongs to the idea of substance extended, which we call body, and that we may even deny of thought everything which belongs to body (such as being long, short, deep, having diversity of parts, and being of such or such a figure, being divisible, &c.), without destroying, on that account, the idea which we have of thought, we conclude from this that thought is not a mode of substance extended, since, according to the nature of a mode, it cannot be conceived to exist when that of which it was the mode is denied. Whence, we infer again, that thought not being a mode of substance extended, must be the attribute of another substance, and that thus the substance which thinks and the substance extended are two substances really distinct; from which it follows that the destruction of the one does not involve the destruction of the other, since even the substance extended is not properly destroyed, but that all which happens in what we call destruction is

nothing more than the change or dissolution of some parts of matter which always remain in nature, as we know well enough that in breaking all the wheels of a clock none of its substance is destroyed, although we say that the clock is destroyed; which proves that the soul, not being divisible, and not being composed of any parts, cannot perish, and is, therefore, immortal.

This is what is called *analysis* or *resolution*, on which it may be remarked:—

1st, That we ought to observe in it, as well as in the method, which is called that of *composition*, always to pass from that which is more known to that which is less; for there is not any true method which can dispense with this rule.

2d, But it differs from that of composition in this—that we take those truths known in the particular examination from the thing which we are supposed to know, and not from things more general, as we do in the method of doctrine. Thus, in the example which we have given, we did not begin by the establishment of these general maxims:—That no substance perishes, properly speaking; that what is called destruction is only a dissolution of parts; that thus that which has no parts cannot be destroyed, &c. But we ascended by degrees to these general knowledges.

3d, We propose clear and evident maxims only in proportion as we need them, whereas, in the other, we establish them at first, as will be shown hereafter.

4th, Finally, these two methods differ only as the road by which we ascend from a valley to a mountain from that by which we descend from the mountain into the valley, which is no difference of road, but only a difference in the going; or, as the two ways differ, which we may employ to prove that a person is descended from St Louis, of which the one is to show that this person had such a one for his father, who was the son of such a one, and he of another, and so on to St Louis; and the other, that of commencing with St Louis, and showing that he had such children, and that from these children others descended down to the person in question. And this example is the more suitable on this occasion, since it is certain, that, in order to find an unknown genealogy, we must remount from the

son to the father, whereas, in explaining it after it has been found, the most common method is to commence with the stock, in order to show the descendants from it, which is also what is commonly done in the sciences, where, after having used analysis to find some truth, we employ the other method for explaining what is found.

We may hence understand that this is the analysis of the geometers; for it proceeds as follows:—A question having been proposed to them, in relation to which they are ignorant—if it be a theorem, of its truth or falsehood; if a problem, of its possibility or impossibility—they assume that it is as it is proposed; and examining what follows from this, if they arrive, in that examination, at some clear truth from which what is proposed to them is a necessary consequence, they conclude from this that what is proposed to them is true; and, returning then through the way they had come, they demonstrate it by another method which is called *composition*. But if they fall, as a necessary consequence from what is proposed to them, into some absurdity or impossibility, they conclude from this, that what is proposed to them is false and impossible.

This is what may be said generally touching analysis, which consists more in judgment and sagacity of mind than in particular rules. The four following, nevertheless, which M. Descartes proposes in his method, may be useful for preserving us from error, when seeking after the truth in human sciences, although, indeed, they apply generally to all kinds of method, and not specially to analysis alone.

The first is, *Never to accept anything as true which we do not clearly know to be so*, that is to say, to avoid carefully precipitation and prejudice, and to comprise nothing more in our judgments than what is presented so clearly to the mind that we have no room to doubt it.

The second, *To divide each of the difficulties we examine into as many parts as possible, and as may be necessary for resolving it.*

A third, *To conduct our thoughts in order, by commencing with objects the most simple and the most easily known, in order to ascend by degrees to the knowledge of the most complex, supposing even, from the order between them, that they do not naturally precede each other.*

The fourth, *to make, in relation to everything, enumerations so complete that we may be assured of having omitted nothing.*

It is true that there is much difficulty in observing these rules, but it is always advantageous to have them in the mind, and to observe them as much as possible when we try to discover the truth by means of reason, and as far as our mind is capable of knowing it.

CHAPTER III.

OF THE METHOD OF COMPOSITION, AND PARTICULARLY OF THAT WHICH THE GEOMETERS OBSERVE.

WHAT we have said in the preceding chapter has already given us some idea of the method of composition, which is the most important, inasmuch as it is that which is employed for the explanation of all the sciences.

This method consists principally in commencing with the most general and simple things, in order to pass to those which are less general and more complex. In this way we avoid repetitions, since, were we to treat of the species before the genus, as it is impossible to know well a species without knowing its genus, it would be necessary to explain the nature of the genus many times in the explanation of each species.

There are still many things to be observed in order to render this method perfect, and fully fitted to the end which it ought to propose, which is, that of giving us a clear and distinct knowledge of truth. But as general precepts are more difficult to comprehend when they are separated from all matter, we will consider the method which the geometers follow, that being always considered best adapted for proving the truth, and for fully convincing the mind of it. We shall first consider what is its excellence; and, in the second place, wherein it appears to be defective.

The geometers having for their aim the advancing only of that which is convincing, have believed that they could secure this by observing three things in general:—

The first is, *to leave no ambiguity in the terms*, which they have provided for by the definition of words, of which we have spoken in the First Part.

The second is, *to establish their reasonings only on principles clear and evident*, and which cannot be contested by any one; which leads them, first of all, to lay down axioms which they require to be granted to them, as being so clear that they would only be obscured by any attempt to prove them.

The third is, *to prove demonstratively all the conclusions which they advance*, by availing themselves only of the definitions which they have laid down of principles which have been accorded to them as being very evident, or of propositions which they have derived from these by the force of reasoning, which afterwards become to them the same as principles.

Thus we may reduce to these three heads all that the geometers have observed for convincing the mind, and include the whole in these five most important rules:—

Necessary Rules:

For Definitions.

1. *To admit no terms in the least obscure or equivocal without defining them.*

2. *To employ in the definitions only terms already known or perfectly explained.*

For Axioms.

3. *To demand as axioms only things perfectly evident.*

For Demonstrations.

4. *To prove all propositions which are at all obscure, by employing in their proof only the definitions which have preceded, or the axioms which have been accorded, or the propositions which have been already demonstrated, or the construction of the thing*

itself which is in dispute, when there may be any operation to perform.

5. *Never to abuse the equivocation of terms by failing to substitute for them, mentally, the definitions which restrict and explain them.*

This is what the geometers have judged necessary in order to render their proofs convincing and invincible. It must be confessed that attention to the observation of these rules is sufficient to enable us to avoid false reasoning in the treating of the sciences, which is, without doubt, the main thing, since all the rest may be called useful rather than necessary.

CHAPTER IV.

MORE PARTICULAR EXPOSITION OF THESE RULES; AND, IN THE FIRST PLACE, OF THOSE WHICH RELATE TO DEFINITIONS.

ALTHOUGH we have already spoken in the First Part touching the utility of the definition of terms, it is nevertheless so important, that we cannot have it too much impressed on our minds, since we may by it clear up a number of disputes, which have as their subject often only the ambiguity of terms, which one takes in one sense, and another in another. So that some of the greatest controversies would cease in a moment, if one or other of the disputants took care to mark out precisely, and in a few words, what he understands by the terms which are the subject of dispute.

Cicero has remarked that the greater part of the disputes between the ancient philosophers, and especially between the Stoics and the Academics, were founded only on this ambiguity of words,—the Stoics being delighted,

in order to elevate themselves, to take several terms in a different sense from others. This created the belief that their morality was much more severe and perfect, although in reality this pretended perfection was only in words, and not in things. The wise man of the Stoics did not less enjoy all the pleasures of life than the philosophers of other sects, apparently not so strict, and did not avoid with less care its evils and inconveniences, with this single difference, that while other philosophers employed the common terms of good and evil, the Stoics, in enjoying pleasures, did not call them *good things*, but *preferable things* (προημένα); and in avoiding evils, they did not call them *evils*, but simply *things to be rejected* (ἀπὸ προημένα).

It is a caution very useful to cast away from all disputes everything which is founded only on the equivocation of words, by defining them in other terms so clear, that it is impossible for them to be any longer mistaken.

For this, the first of the rules which we have laid down avails: *never to leave any term at all obscure or equivocal without defining it.*

But in order to derive all the profit which we ought to do from these definitions, it is necessary still to add the second rule,—*to employ in the definitions only terms perfectly well known, or already explained.*

For when we have not marked out with sufficient precision and distinctness the idea to which we wish to attach a word, it is almost impossible for us, in the course of the argument, to avoid passing to another idea than that which we had marked out,—that is to say, instead of mentally substituting, every time we use the word, the same idea which we had designated, we substitute for it another word with which nature furnishes us; and it is easy to discover this by formally substituting the definition for the thing defined. For this ought not to change the proposition at all if we have always kept to the same idea, whereas it will change it if we have not done so.

All this will be better comprehended by some examples. Euclid defines a plane rectilinear angle *the meeting of two right lines which incline towards each other in the same plane.* If we consider this definition as the simple definition of a

word, so that the word *angle* be considered as having been deprived of all signification in order to receive that of the meeting of two right lines, there is nothing to censure in it; for Euclid may be permitted to call the word *angle* the meeting of two lines. But he is bound to remember this, and never to take the word *angle* in any other sense. Now, in order to do this, it is only necessary to substitute for the word *angle*, wherever he uses it, the definition of it which he has given; and if, in substituting this definition, there be found any absurdity in what is said of an angle, it will follow that he has not kept to the same idea as he had designated, but that he has unconsciously passed to another, which is that of nature. He tells us, for example, how to divide an angle in two. Substitute his definition: Who does not see that it is not the meeting of two lines which we divide into two,—but it is not the meeting of two lines which has sides and a base or subtendant,—but that all this belongs to the space between the lines, and not to the meeting of the lines?

It is plain that what perplexed Euclid, and withheld him from designating an angle by the words—*space comprised within two lines which meet together*—was, that he saw that this space might be larger or smaller when the sides of the angle were longer or shorter, without the angle within being greater or less. But he ought not to have concluded from this that the rectilinear angle was not a space, but simply that it was a space contained between two right lines which meet together, indeterminate in relation to the one of the two dimensions, which answers to the length of these lines,—and determinate in relation to the other by the proportional part of a circumference, which has for its centre the point in which these lines meet.

This definition designates so exactly the idea which all men have of an angle, that it is at once the definition of a word and of a thing, except that the word *angle* comprises also, in common discourse, a solid angle, whereas, by this definition, it is restricted to signify a plane rectilinear angle. And when we have thus defined an angle, it is indubitable that everything which we may afterwards say of a plane rectilinear angle (such as we find in all

rectilinear figures) will be true of this angle thus defined, without our ever being obliged to change the idea, and without our meeting with any absurdity in substituting the definition for the thing defined. For it is that space, thus explained, which we may divide into two, into three, into four; it is that space which has two sides, between which it is contained; it is that space which we may terminate on the side which is itself indeterminate, by a line which is called the base or subtendant; it is that space which is not considered as greater or less for being contained between lines longer or shorter, because, being indeterminate in relation to this dimension, it is not from this that we ought to measure its greatness or smallness. By this definition, too, we obtain the means of judging whether one angle is equal to another angle, or greater or less; for since the size of that space is only determined by the proportional part of a circumference, which has for its centre the point in which the lines which contain the angle meet, when two angles have for their measure equal aliquot parts of its circumference, they are equal, as, for instance, the tenth part; and if one has the tenth, and the other the twelfth, that which has the tenth is greater than that which has the twelfth. Whereas, according to the definition of Euclid, we cannot understand in what the equality of two angles consists, which produces a terrible confusion in his Elements, as Ramus has remarked, though he himself makes scarcely any improvement.

The following are other definitions of Euclid, in which he commits the same fault as in that of the angle. "*Ratio*," says he, "*is the habitude of two magnitudes of the same kind compared together, according to quantity. Proportion is a likeness of ratios.*"

According to these definitions, the term *ratio* ought to comprehend the habitude which is between two magnitudes, when we consider how far one exceeds the other; for it cannot be denied that this is a habitude of two magnitudes compared in relation to their quantity; and, consequently, four magnitudes will have a proportion together when the difference of the first to the second is equal to the difference of the third to the fourth. Nothing, therefore, can be said against these definitions of Euclid, provided that he always

keeps to the notions which he has designated by these words, and to which he has given the names of *ratio* and *proportion*. But he does not always keep to them, since, according to what follows in his book, these four numbers, 3, 5, 8, 10, are not proportional, although the definition which he has given to the word *proportion* agrees with them, since there is between the first number and the second, compared according to quantity, a like habitude to that which exists between the third and the fourth.

It is necessary, therefore, in order not to be deceived by this disagreement, to remark that we may compare two magnitudes in two ways, one by considering how much one exceeds the other, and the other, in what way one is contained in another; and since these two habitudes are different, it is necessary to give them different names, giving to the first the name of *difference*, and to the second the name of *ratio*. It is necessary, accordingly, to define proportion as the equality of one or other of these kind of habitudes, that is to say, of the *difference* or of the *ratio*; and since this makes two species, to distinguish them also by two different names, by calling the equality of the differences *arithmetical proportion*, and the equality of the ratios *geometrical proportion*. And since this last is of much greater use than the first, we might still further premise, that when we simply speak of *proportion*, or proportional magnitudes, we mean geometrical proportion, and that we mean arithmetical only when it is so expressed. This would have cleared up all obscurity, and have removed the equivocation.

All this shows us that we ought not to abuse that maxim, that the definition of words is arbitrary, but that great care ought to be taken to designate so accurately and clearly the idea to which we wish to connect the word which we define that we cannot be deceived by it in the subsequent discourse, by changing that idea, that is, by taking the word in another sense from that which we had given to it in the definition, so that we cannot substitute the definition for the thing defined without falling into some absurdity.

CHAPTER V.

THAT THE GEOMETERS DO NOT APPEAR ALWAYS TO HAVE RIGHTLY UNDERSTOOD THE DIFFERENCE WHICH EXISTS BETWEEN THE DEFINITION OF WORDS AND THE DEFINITION OF THINGS.

ALTHOUGH there are no authors who have turned the definition of words to better account than the geometers, I feel myself, nevertheless, obliged to remark here, that they have not always regarded the difference which ought to be observed between the definitions of things and the definitions of words, to wit, that the first are open to dispute, and that the others cannot be disputed; for there are some who dispute about the definition of words as earnestly as though they were the things themselves.

Thus we may see, in the Commentaries of Clavius on Euclid, a long and very angry dispute between Pelletier and himself, touching the space between the tangent and the circumference, which Pelletier affirmed was not an angle, when Clavius maintained that it was. Who does not see that all this might have been settled in a word by demanding from each what he understood by the term *angle*?

We see, again, that Simon Stevin, a very celebrated mathematician of the Prince of Orange, having defined number thus:—*Number is that by which the quantity of everything is explained*,—gets immediately into a great rage against those who do not allow unity to be a number, breaking into rhetorical exclamations as though it were a most important discussion. It is true that he mingles with that discourse a question of some importance, which is, Whether the unit is to number what a point is to a line? But it is necessary to distinguish this, in order that we may not confuse two things very different. And thus, to treat separately these two questions—the one, whether the unit is a number; the other, whether the unit is to number what a

point is to a line—it must be said about the first that it is only a dispute touching words, and that the unit may be a number, or may not be, according to the definition which we choose to give of number; for, defining it as Euclid does,—*number is a multitude of units together*—it is plain that the unit is not a number; but that, as this definition of Euclid was arbitrary, and we may thus give another to the word number, we may give to it one such as that which Stevin proposes, according to which unity is a number. Hence the first question is void; and we cannot say anything against those who choose to call unity a number without a manifest begging of the question, as we may see by examining the pretended demonstrations of Stevin. The first is:—

The part is of the same nature as the whole;
Unity is part of a multitude of units;
Therefore unity is of the same nature as a multitude of units, and, consequently, a number.

This argument is worth nothing at all; for though the part be always of the same nature as the whole, it will not follow that it must always have the same name as the whole; and, on the contrary, it very often happens that it has not the same name. A soldier is one part of an army, and not an army; a room is one part of a house, and not a house; a semicircle is not a circle; a part of a square is not a square. This argument proves, therefore, rather that unity, being part of a multitude of unities, has something in common with the whole multitude of unities, in relation to which we may say that it is of the same nature; but this does not prove that we are obliged to give the same name, *number*, to a unit and a multitude of units, since we may, if we choose, keep the term, *number*, for a multitude of units, and give to the unit only the name of unity, or of a part of a number.

The second reason of Stevin is no better:—

If, from a given number we take away no number, the number remains the same;
Therefore, if unity were no number, in taking one from three, the given number would remain the same, which is absurd.

But the major here is ridiculous, and supposes the very

thing in dispute; for Euclid will deny that the given number remains when we have taken away no number from it, since it is enough for its not continuing what it was, that we take away from it either a number, or a part of a number, such as the unit is. And if this argument were good, we might prove, in the same way, that in taking away a semicircle from a given circle, the given circle must remain, since we have taken away from it no circle.

Thus all the arguments of Stevin prove rather that we may define the word *number* in such a way that it may apply to unity, inasmuch as unity, and the multitude of unities, have sufficient in common to enable them to be signified by the same name; but they do not prove at all that we may not also define number by restricting this word to a multitude of units, in order that we may not be obliged to except unity whenever we explain the properties which belong to all numbers but unity.

But the second question—that, to wit, whether the unit is to other numbers as the point is to the line—is not of the same nature as the first, and is not a dispute of a word, but of a thing. For it is absolutely false that the unit may be to number as the point is to the line, since unity added to a number, makes it greater, whereas, when a point is added to a line, it does not. Unity is part of number, and the point is no part of a line. When unity is taken away from a number, the given number does not remain; and when the point is taken away from the line, the given line does remain.

The same Stevin is full of such disputes on the definition of words, as when he labours zealously to prove that number is not a discrete quantity—that the proportion of numbers is always arithmetical, and not geometrical,—that every root, of any number whatever it may be, is a number;—which proves that he did properly understand what the definition of a word was, and that he has taken the definitions of words which cannot be contested, for the definitions of things which may be very often justly contested.

CHAPTER VI.

OF THE RULES WHICH RELATE TO AXIOMS,—THAT IS, TO PROPOSITIONS CLEAR AND EVIDENT OF THEMSELVES.

EVERY one agrees that there are propositions so clear and so evident in themselves, that they do not need any demonstration; and that all those which are not demonstrated ought to be such, in order to become the principles of a true demonstration. For if they be at all uncertain, it is clear that they cannot be the foundation of a conclusion altogether certain.

But many do not sufficiently comprehend in what this clearness and evidence of a proposition consists. For, in the first place, we must not imagine that a proposition is clear and certain when no one contradicts it; and that we ought to consider it doubtful, or, at least, must be obliged to prove it, when any one denies it. If this were so, there would be nothing certain or clear, since philosophers have been found who have professed to doubt, generally, of everything, and some even who have maintained that there is no proposition at all more probable than its contrary. We ought not, therefore, to judge of certainty and clearness by the disputes of men, for there is nothing that may not be contested, in word, at least; but we must hold as clear that which appears so to all those who will take the trouble to consider things with attention, and who are sincere in the utterance of what their inward conviction is. Hence, what Aristotle says is of most important meaning, that demonstration properly relates to the interior discourse, and not to the exterior; since there is nothing so well demonstrated that it may not be denied by an obstinate man, who undertakes to dispute in words the things even of which he is inwardly persuaded. This is a very ill disposition, and altogether unworthy of a well-constituted mind, though it is true that this humour often

obtains in the schools of philosophy, through the custom which is introduced among them of disputing about everything, and making it a point of honour never to yield, he being accounted the man of most mind who is most prompt at discovering evasions for avoiding it; whereas the character of an honourable man is to lay down his arms before the truth as soon as he perceives it, and to love it even in the mouth of his adversary.

Secondly, even those philosophers who hold that all our ideas come from sense, maintain also, that all the certainty and evidence of propositions comes either immediately or mediately from sense. "For," say they, "even that axiom which is considered as clear and evident as we can possibly desire—*the whole is greater than its part*—is firmly established in our minds only because that from our infancy we have observed in detail that a man is greater than his head, and a whole house than a chamber, and a whole forest than a tree, and the whole heaven than a star."

This fancy is as false as that which we have refuted in the First Part, *that all our ideas come from sense.* For if we were assured of this truth—*the whole is greater than its part*—only through the different instances in which we had observed it from our infancy, we should have only a probable assurance of it, since induction is only a *certain* means of knowing a thing when we are assured that the induction is complete;—there being nothing more common than to discover the falsity of what we had believed to be true, on inductions which appeared to us so general, that we could not imagine any exception could be found.

Thus, not long since, it was believed as indubitable that the water contained in a curved vessel, of which one end was much larger than the other, remained always level—being no higher in the small end than in the large—because it had been proved by a multitude of observations. It has been, however, lately found that this is false when one of the ends is extremely narrow, since then the water rises higher in it than in the other. This shows that inductions alone could never give us complete certainty of any truth,—at all events, not before we were assured that they were universal, which is impossible. And, conse-

quently, we could only have a probable assurance of the truth of this axiom, that *the whole is greater than its part*, if we were only assured of it in consequence of having seen that a man is greater than his head, a forest than a tree, the heaven than a star,—since we should be always open to doubt whether there might not be some other whole, which we had not observed, which was not greater than its part.

It is not, therefore, on these observations which we have made from our infancy that the certainty of this axiom depends. There is, on the contrary, nothing more capable of keeping us in error than the holding fast to these prejudices of our childhood. But this certainty depends solely on this, that the clear and distinct ideas which we have of a whole and of a part manifestly involve that the whole is greater than the part, and that the part is smaller than the whole. And all that could be effected by the different observations which we have made, of a man being greater than his head, a house than a room, has been to furnish us with occasions of paying attention to the ideas of *whole* and *part*. But it is positively false that they were the cause of the absolute and immoveable certainty that we have of the truth of this axiom. This, I think, I have demonstrated.

What we have said of this axiom may be said of all others, and thus we believe that the certainty and evidence of human knowledge in natural things depends on this principle,—

All that is contained in the clear and distinct idea of a thing may be affirmed with truth of that thing.

Thus, since the being *animal* is contained in the idea of *man*, I may affirm of man that he is animal; since, having all its diameters, equal is contained in the idea of a circle, I may affirm of every circle that all its diameters are equal; since, having all its angles, equal to two right angles is contained in the idea of a triangle, I may affirm this of every triangle.

We cannot dispute this principle without destroying the whole evidence of human knowledge and establishing an absurd Pyrrhonism. For we can judge of things only by the ideas which we have of them, since the only means we

have of conceiving them is what we have in our mind, and they are there only through our ideas. Now, if the judgments which we form by considering these ideas do not regard things in themselves, but simply our thoughts—that is to say, if, when I see clearly that the having three angles equal to two right angles is contained in the idea of a triangle, I have no right to conclude, in truth, that every triangle has three angles equal to two right angles, but simply that I think so—it is plain that we could have no knowledge of things, but simply of our thoughts, and, consequently, we should know nothing of the things we are persuaded that we know most certainly; but we should only know that we think them to be so and so, which would manifestly destroy all the sciences.

And it need not be thought that there are any men who seriously acquiesce in these consequences, that we do not know in relation to anything, whether it be true or false in itself. For there are some things so simple and so evident—as, *I think, therefore I am; the whole is greater than its part*—that it is impossible seriously to doubt whether they are in themselves such as we conceive them. The reason is, that we cannot doubt of them without thinking of them, and that we cannot think of them without believing them true, and, consequently, we cannot doubt them.

Nevertheless, this principle alone is not sufficient to judge of what ought to be believed as an axiom; for there are attributes which are really contained in the idea of things, which, nevertheless, may, and ought, to be demonstrated—as, the equality of all angles of a triangle to two right angles, or of all those of a hexagon to eight right angles. But we must carefully observe whether we need only consider the idea of a thing with a slight attention, in order to see clearly that such an attribute is contained in it, or whether, besides, it is necessary to join to it some other idea, in order to perceive that connection. When it is necessary to consider only the idea, the proposition may be taken as an axiom, especially if that consideration requires only a moderate attention, of which all common minds are capable. But if some other idea be necessary besides the idea of the thing, it is a proposition which needs to be demonstrated. Thus we may give the two following rules for axioms:—

1st RULE.

When, in order to see clearly that an attribute belongs to a subject (as that it belongs to a whole to be greater than its part), we need only consider the two ideas of subject and attribute with moderate attention, so that we cannot give this attention without perceiving that the idea of that attribute is truly contained in the idea of the subject. We ought, then, to take this proposition as an axiom which needs no demonstration, because it has, of itself, all the evidence which demonstration could have given to it, since demonstration could do nothing more than show that this attribute belongs to the subject, by employing a third idea to show this connection, which we see already without the aid of any third idea.

But we must not confound a simple exposition (though this should even take the form of an argument) with a true demonstration; for there are axioms which need to be explained, in order that they may be better understood, although they do not need to be demonstrated, the exposition being nothing more than saying in other words, and more at length, what is contained in the axiom, whereas, demonstration requires some new mean which the axiom did not clearly contain.

2d RULE.

When the simple consideration of the idea of the subject and the attribute is not sufficient to enable us to see clearly that the attribute belongs to the subject, the proposition which affirms that it does ought not to be taken as an axiom; but it ought to be demonstrated by employing some other ideas to show that connection, as we employ the idea of parallel lines in order to show that the three angles of a triangle are equal to two right angles.

These two rules are more important than we may think, for it is one of the most common defects among men, that of not consulting themselves in relation to what they affirm or deny,—of referring to what they have heard said, or what they have previously thought, without carefully observing what they would think of them themselves if they were to consider with more attention what passes in their own mind—of confining themselves rather to the sound of the words than to their true ideas—of affirming, as clear and evident, that which it is impossible for them to conceive, and denying, as false, what it would be impossible for them not to believe true, if they would take the trouble to consider it seriously.

For example, those who say that in a piece of wood, besides its parts and their situation, their figure, their motion, or rest, and the pores which enter into their parts—there is still a *substantial form* distinguished from all this, think they say nothing but what is certain, while, however, they utter a thing which neither themselves nor any one else comprehends, or ever will comprehend.

While, if, on the contrary, we would explain to them the effects of nature, by the insensible parts of which bodies are composed, and by their different situation, size, figure, motion, or rest, and by the pores which traverse these parts, and which allow or arrest the passage of other matters, they believe that we speak to them only of chimeras, although we tell them nothing but what may be conceived very easily; and, by a strange perversion of mind, the facility even with which these things are comprehended induces them to believe that they are not the true causes of natural effects, but that these are more hidden and mysterious; so that they are more disposed to believe those who explain them by principles which they cannot conceive than those who employ only principles which they can understand.

And it is, again, humorous enough, that when we speak to them of insensible parts, they think themselves entitled to reject them, because they can neither see nor touch them; while, however, they rest satisfied with substantial forms, ponderosity, attractive virtue, &c., which they not only never saw or touched, but which they cannot even conceive.

CHAPTER VII.

OF SOME AXIOMS WHICH ARE IMPORTANT, AND WHICH MAY BE EMPLOYED AS THE PRINCIPLES OF GREAT TRUTHS.

EVERY one allows that it is important to have in the mind many axioms and principles, which, being clear and

indubitable, may be employed as a foundation for obtaining a knowledge of things more obscure. But those which are commonly given are of such little use that it is scarcely worth while to know them; for that which is called the first principle of knowledge—*it is impossible for the same thing to be, and not to be*—is very clear and certain; but I do not see how it can avail to furnish us with any knowledge. I believe, therefore, that those which follow will be of more use. I commence with that which we have already explained.

1st AXIOM.

Everything which is contained in the clear and distinct idea of a thing may be affirmed of it with truth.

2d AXIOM.

Existence (possible at least) is contained in the idea of everything which we conceive clearly and distinctly.

For as soon as a thing is conceived clearly we cannot but regard it able to be so, since it is only the contradiction which we find between our ideas, which leads us to believe that a thing cannot be. Now there can be no contradiction in an idea when it is clear and distinct.

3d AXIOM.

Nothing cannot be the cause of anything.

Other axioms spring from this, which may be called its corollaries; such as the following:—

4th AXIOM, or 1st COROLLARY of the 3d.

No thing, nor any perfection of that thing actually existing, can have nothing, or a thing non-existent, as the cause of its existence.

5th AXIOM, or 2d COROLLARY of the 3d.

All the reality or perfection which is in a thing, is found, formally or eminently, in its first and total cause.

6th Axiom, or 3d Corollary of the 3d.

No body is able to move itself,—that is to say, to give itself motion when it has none.

This principle is so evident, naturally, that it caused the introduction of substantial forms, and the real qualities of heaviness and lightness; for philosophers, seeing, on the one hand, that it was impossible for that which was moved to move itself, and being falsely persuaded, on the other, that there was nothing without the stone which pushed it downwards when it fell, felt themselves obliged to distinguish two things in a stone—the matter which received the motion, and the substantial form, aided by the accident of heaviness, which gave it. They did not, however, observe, that thus they either fell into the difficulty which they wished to avoid, if that form was at once material, that is to say, a true matter,—or that, if it was not matter, it must be a substance which is really distinct from it; which it was impossible for them to conceive clearly,—at least, to conceive as a mind, that is, a substance which thinks, which is truly the form of man, and not that of any other body.

7th Axiom, or 4th Corollary of the 3d.

No body can move another, unless it is itself moved. For if a body, being at rest, is unable to give itself motion, it is still less able to give it to another body.

8th Axiom.

We ought not to deny what is clear and evident because we cannot comprehend what is obscure.

9th Axiom.

It belongs to the nature of a finite mind, that it cannot comprehend the infinite.

10th Axiom.

The testimony of one infinitely powerful, infinitely wise, in-

finitely good, and infinitely truthful, ought to persuade our minds more powerfully than the most convincing reasons.

For we ought to be more assured that he who is infinitely intelligent cannot be deceived, and that he who is infinitely good cannot deceive us, than we are that we are not deceived in things the most clear.

These three last axioms are the ground of faith, of which we shall say something hereafter.

11th Axiom.

When those facts of which sense may easily judge are attested by a very great number of persons, of different times, different nations, different interests, who affirm that they have personally known them, and who cannot be suspected of having conspired together to support a deception, we ought to consider them as as well established and indubitable as though we had seen them with our own eyes.

This is the ground of the greater part of our knowledge, since the things which we know in this way are more numerous by far than those which we know by our own observation.

CHAPTER VIII.

OF THE RULES WHICH RELATE TO DEMONSTRATION.

A TRUE demonstration requires two things: the one, that there be nothing in the *matter* but what is certain and indubitable; the other, that there be nothing vicious in the *form* of the argument. Now we shall certainly secure both if we observe the two rules which have been laid down.

For there would be only what is true and certain in the matter, if all the propositions which we employ as proofs are:

Either definitions of words which have been already explained, which, being arbitrary, cannot be disputed:

Or axioms which have been granted, and which ought not to have been assumed unless they were clear and evident in themselves, according to the third rule:

Or propositions already demonstrated, and which have become clear and evident by the demonstration which has been given of them:

Or a construction of the thing itself which is in question, when there may be any operation to perform, which ought to be as indubitable as the rest, since this construction ought to have been beforehand shown to be possible, if there was any doubt as to whether it was so.

It is, therefore, clear, that by observing the first rule, we shall never advance as a proof any proposition which is not certain and evident.

It is also easy to show that we shall not sin against the form of reasoning if we observe the second rule, which is, always to avoid choosing the equivocation of terms by mentally substituting the definitions which restrict and explain their meaning.

For if we ever sin against the rules of syllogism, it is by deceiving ourselves with the equivocation of some term, and by taking it in one sense in one of the propositions, and in another sense in the other; which principally happens in the middle term of a syllogism, the taking of which in two different senses, in the two first propositions, is the most common defect of vicious arguments. Now it is clear that we shall avoid this defect by observing that second rule.

Not but that there are still other vices of reasoning besides that which springs from the equivocal meaning of terms, but these it is almost impossible for a man of average mind, and possessed of some knowledge, ever to fall into, especially in speculative matters, and thus it would be useless to give rules against these vices, and urge their observance; and it would indeed be frivolous, since the application which would be given to these superfluous rules might divert the attention which we ought to pay to things more necessary. Thus we see that the geometers never take any trouble about the form of their arguments, nor

think of conforming to the rules of logic, without, however, being at all defective in this particular, since it is done naturally, without the need of study.

There is still an observation to be made about the propositions which need to be demonstrated: it is, that we ought not to place amongst this number those which may be so by the application of the rule of evidence to every evident proposition; for, if this were so, there would be scarcely any axiom that would not need to be demonstrated, as they might almost all be by that proposition which we have said may be taken as the foundation of all evidence—*Everything which we see to be contained in a clear and distinct idea may be affirmed with truth.* We may say, for example:—

Everything which we see to be contained in a clear and distinct idea may be affirmed with truth;
Now we see clearly that the clear and distinct idea which we have of a whole contains the being greater than its part;
Therefore, we may affirm with truth that the whole is greater than its part.

But though this proof may be very good, it is nevertheless not necessary, because our mind supplies that major without having any need to pay special attention to it, and thus sees clearly and evidently that the whole is greater than its part, without the need of any reflection as to whence this evidence arises; for it is one thing to know a thing evidently, and another to know whence that evidence springs.

CHAPTER IX.

OF SOME DEFECTS WHICH ARE COMMONLY TO BE MET WITH IN THE METHOD OF THE GEOMETERS.

We have seen what of excellence the method of the geometers possesses. We have reduced this method to five rules, which we cannot too thoroughly fix in our

minds: and it must be confessed that there is nothing more admirable than the discovery of so many hidden things, and their demonstration, by reasons so strong and so invincible, through the employment of so few rules: so that, among all philosophers, to them alone belongs the advantage of having banished from their schools and books controversy and dispute.

Nevertheless, if we would judge of things without prejudice, as we cannot take away from them the glory of having followed a much more certain course for the discovery of truth than any others, so neither can we deny that they have not fallen into some defects, which, though they have not turned them aside from their end, have nevertheless prevented them from reaching it by the shortest and most convenient route. I will endeavour to show this by selecting from Euclid some examples of these defects.

1st Defect.

Paying more attention to certainty than to evidence, and to the conviction of the mind than to its enlightenment.

The geometers are worthy of all praise in seeking to advance only what is convincing; but it would appear that they have not sufficiently observed, that it does not suffice for the establishment of a perfect knowledge of anything, to be convinced that it is true, unless, beyond this, we penetrate into the reasons, derived from the nature of the thing itself, why it is true. For until we arrive at this point, our mind is not fully satisfied, and still seeks greater knowledge than this, which marks that it has not yet a true knowledge. We may say that this defect is the source of all the others which we shall notice; and thus it is not necessary to explain it further here, since we shall speak of it sufficiently in what follows.

2d Defect.

Proving things which have no need of proof.

The geometers maintain that it is not necessary to undertake the proof of what is clear of itself. They nevertheless

often do it, because, being more bent on convincing the mind than enlightening it, as we have said, they believe that they shall convince it better by finding some proof of those things even which are most evident, than by simply proposing them, and leaving the mind to recognise their evidence.

It is this which led Euclid to prove that the two sides of a triangle are greater than a single one, although this was evident from the very notion of a right line, which is the shortest possible distance between two points, and the natural measure of the distance from one point to another, which it would not be if it were not also the shortest of all lines which could be drawn from one point to another.

This is what led him, again, to make the following:—*To draw a line equal to a given line*—not a postulate, but a problem which must be demonstrated, although it is easy, and indeed more so than to draw a circle having a given radius.

This defect has arisen, no doubt, from its not having been sufficiently considered that all the certainty and evidence of our knowledge in the natural sciences spring from this principle:—*That we may affirm of a thing all that is contained in its clear and distinct idea.* Whence it follows, that when we need only, in order to recognise that an attribute is contained in an idea, to consider the idea simply, without connecting it with others, it ought to be considered as clear and evident, as we have already said above.

I know, indeed, that there are some attributes which may be seen more easily in ideas than others, but I believe that it is enough that they are able to be seen clearly with a moderate attention, and that no man, with a rightly constituted mind, is able seriously to doubt them; for those propositions, which are derived thus from the simple consideration of ideas, to be regarded as principles which have no need of proof, but, at most, of a little explanation. Thus I maintain that we cannot pay much attention to the idea of a right line without perceiving not only that its position depends on two points alone (which Euclid has taken as one of his postulates), but that we can also comprehend, without trouble, and very clearly, that if a right line cut another, and there are two points in the cutting line, each

of which is equally distant from two points in the line which is cut, there will be no other point of the cutting line which is not equally distant from these two points of the line which is cut. Hence, it will be easy to determine when a line is perpendicular to another without employing either angle or triangle, which ought not to be treated of, before the things which are demonstrated by perpendiculars alone, are well established.

It is also to be remarked that there are some excellent geometers who employ, as principles, propositions less clear than these: as Archimedes, who established his beautiful demonstration on this axiom—*That if two lines in the same plane have their extremities common, and are bent or hollow towards the same part, what is contained will be less than that which contains.*

It must be confessed that this defect of proving what needs no proof does appear a very great one, and is not so in itself; but it is important in its consequences, since it is from this that the inversion of the natural order, of which we shall speak below, springs;—this desire of proving what ought to be assumed as clear and evident of itself, having often obliged the geometers to treat of things (in order to employ them, as proofs, in what ought not to have been proved) which, according to the order of nature, should have been treated of afterwards.

3d Defect.

Demonstrating by Impossibility.

Those kind of demonstrations which show that a thing is such, not by its principles, but by some absurdity which would follow, if it were not so, are very common in Euclid. It is clear, however, that while they may convince the mind, they do not enlighten it, which ought to be the chief result of knowledge; for our mind is not satisfied unless it knows not only that a thing is, but why it is, which cannot be learnt from a demonstration which reduces it to the impossible.

Not that these demonstrations are to be altogether rejected, for we may oftentimes employ them to prove

negatives, which are properly only corollaries from other propositions, either clear of themselves or demonstrated before in another way; and then that kind of demonstration, by reducing them to the impossible, occupies the place rather of an explanation than a new demonstration.

We may say, in fine, that these demonstrations are allowable only when we are unable to furnish others, and that it is a fault to employ them in proving what may be positively proved. Now there are many propositions in Euclid which he has only proved in this way which may be otherwise proved without any great difficulty.

4th Defect.

Far-fetched Demonstrations.

This defect is very common among the geometers—they take no trouble as to the quarter whence the proofs which they furnish are obtained, provided they are convincing—to prove things by foreign methods is, however, to prove them but very imperfectly.

This will be better understood by some examples:—Euclid I., prop. 5, proves that an isosceles triangle has the two angles at its base equal, by prolonging equally the sides of the triangle and making new triangles, which he compares with the others.

But is it credible that a thing so easy of proof as the equality of these angles required so much artifice to prove it, as though anything would be more ridiculous than to imagine that this equality depended on these foreign triangles, whereas, had the true order been observed, many other ways existed of proving this same equality, much shorter, easier, and more natural?

The 47th of the First Book, where it is proved that the square of the base which contains a right angle, is equal to the two squares of the sides, is one of the most admired propositions of Euclid: it is, however, sufficiently clear that the manner in which it is proved is not natural, since the equality of the squares does not depend on the equality of the triangles, which is taken as the mean in that demonstration, but on the proportion of the lines, which may

be easily demonstrated without employing any other line than that let fall from the point of the right angle on the base.

All Euclid is full of these far-fetched demonstrations.

5th Defect.

Paying no attention to the true order of nature.

This is the greatest defect of the geometers.

They have fancied that there is scarcely any order for them to observe, except that the first propositions may be employed to demonstrate the succeeding ones. And thus, disregarding the true rule of method, which is, always to begin with things the most simple and general, in order to pass from them to those which are more complex and particular, they confuse everything, and treat pell-mell of lines and surfaces, and triangles and squares, proving by figures the properties of simple lines, and introducing a mass of other distortions which disfigure that beautiful science.

The elements of Euclid are quite full of this defect. After having treated of extension in the first four Books, he treats generally of the proportions of all kinds of magnitudes in the Fifth. He returns to extension in the Sixth, and treats of numbers in the Seventh, Eighth, and Ninth, and begins in the Tenth to speak again of extension. So much for the general disorder; but it is full of a mass of confusion in detail. He commences the First Book by the construction of an equilateral triangle, and, subsequently (twenty-two propositions after), he gives the general means for making any triangle of three given straight lines, provided that two are greater than a single one, which involves the particular construction of an equilateral triangle on a given line.

He proves nothing of perpendicular and parallel lines, except by triangles. He measures the dimension of surfaces with that of lines.

He proves—Book I., proposition 16—that, the side of a triangle being prolonged, the exterior angle is greater than either of the interior and opposite angles; and, six propositions further on, he proves that that exterior angle is equal to the two opposite angles.

It would be necessary to transcribe the whole of Euclid, in order to give all the examples which might be found of this confusion.

6th Defect.

Employing no divisions and partitions.

There is still another defect in the method of the geometers, that of not employing divisions and partitions. It is not that they do not mark all the species of the genera which they treat of, but that they do this simply by defining the term, and placing all the definitions one after another, without indicating that one genus has so many species, and can have no more, because the general idea of the genus can receive only so many differences, which would tend to throw considerable light upon the nature of genus and species.

For example, we find in the First Book of Euclid definitions of all the species of triangles. But who can doubt that it would be much clearer to speak of them as follows?—

A triangle may be divided in relation to its sides, or in relation to its angles.

For the sides are either	all equal, and it is called	*Equilateral.*
	two only equal, and it is called	*Isosceles.*
	all three unequal, and it is called	*Scalene.*
The angles are	either	all three acute, and it is called	*Oxigon.*
	either	two only acute, and then the third is	
	either	right, and it is called	*Rectangle.*
	either	obtuse, and it is called	*Amblygon.*

It is, indeed, much better not to give the division of triangles before having explained and demonstrated the properties of triangle in general, from which we shall have learnt that at least two angles of a triangle must be acute, because the three together are only equal to two right angles.

The defect comes under that rule which enjoins that we do not treat of, or even define, the species before the genus

is well known, especially when there are many things which may be said of the genus without speaking of the species.

CHAPTER X.

REPLY TO WHAT IS SAID BY THE GEOMETERS ON THIS SUBJECT.

THERE are some geometers who think they have justified these defects by saying that they have paid no attention to them, that it is enough for them that they say nothing which they do not prove in a convincing manner, and that they are, in this way, assured of having found the truth, which is their sole aim.

It must be allowed, moreover, that these defects are not so considerable, but that we are compelled to acknowledge that of all human sciences there are none which have been better handled than those which are comprised under the general name of mathematics. All that we maintain is that something may be added to them, in order to render them more perfect, and that, though the principal thing that ought to be considered is to advance nothing but what is true, it is, nevertheless, to be desired that more attention had been paid to the more natural manner by which truth is conveyed to the mind.

For the geometers may say, if they please, that they do not care about the true order, or whether they prove by near or distant ways, provided that they accomplish what they seek, which is to convince; but they cannot change, in this way, the nature of our mind, nor prevent us from having a knowledge much more accurate, more entire and complete, of things which we know through their true causes and principles, than of those which are proved to us only through foreign and indirect ways.

It is indubitable, indeed, that we learn with incomparably greater facility, and retain much better, what has been taught us in the true order; because the ideas which have a natural connection arrange themselves much better in our memory, and suggest each other much more readily.

We may say, indeed, that what we have once known, by having penetrated into its true reason, is not retained by the memory but by the judgment, and that it becomes so thoroughly our own that we are unable to forget it; whereas what we know only by demonstrations which are not founded on natural reasons, escapes us easily, and is with difficulty recovered when it has once passed from memory, because our mind furnishes us with no means of recovering it.

"It must be conceded, therefore, that it is in itself much better to observe this order than not to observe it. But all that can be said with justice is, that a small inconvenience must be neglected when we cannot avoid it without falling into a greater; that thus it is an inconvenience that the true order is not observed, but that it is better, nevertheless, to disregard it than to fail of proving invincibly that which we advance, and to expose ourselves to the danger of falling into error and paralogism, by seeking after proofs which are more natural, but which are not so convincing nor so free from all suspicion of deception.

This reply is very reasonable; and I confess that we must prefer, in all things, the certainty of not being deceived, and that the true order must be neglected if we cannot follow it without losing much of the force of the demonstrations, and exposing ourselves to error. But I do not concede that it is impossible to observe both; and I believe that a work on the elements of geometry can be made in which all things should be treated in their natural order, all propositions proved in very simple and natural ways, and in which, nevertheless, everything should be most clearly demonstrated. (This has since been accomplished in the NEW ELEMENTS OF GEOMETRY, and particularly in the new edition which has lately appeared.)

CHAPTER XI.

THE METHOD OF THE SCIENCES REDUCED TO EIGHT PRINCIPAL RULES.

We may conclude from what has been said, that in order to have a method which should be still more perfect than that which is in use amongst the geometers, we ought to add two or three to the rules which were given in the second chapter, so that all these rules may be reduced to eight:—

Of which the two first relate to ideas, and may be referred to the First Part of this Logic;

The third and fourth relate to axioms, and may be referred to the Second Part;

The fifth and sixth to reasonings, and may be referred to the Third Part;

And the two last relate to order, and may be referred to the Fourth Part.

Two Rules touching Definitions.

1. Not to leave any terms at all obscure or equivocal, without defining them.

2. To employ in definitions only terms perfectly well known, or already explained.

Two Rules for Axioms.

3. To demand as axioms only things perfectly evident.

4. To receive as evident that which requires only a slight attention to the recognition of its truth.

Two Rules for Demonstrations.

5. To prove all propositions which are at all obscure by employing in their proof only the definitions which have

preceded, or the axioms which have been granted, or the propositions which have been already demonstrated.

6. Always to avoid the equivocation of terms, by substituting mentally the definitions which restrict and explain their meaning.

Two Rules for Method.

7. To treat of things, as far as possible, in their natural order, by commencing with the most general and simple, and explaining everything which belongs to the nature of the genus before passing to its particular species.

8. To divide, as far as possible, every genus into all its species, every whole into all its parts, and every difficulty into all its cases.

I have added to these two rules—*as far as possible*,—because there are, indeed, many occasions on which we cannot rigorously observe them, either because of the limits of the human mind, or of those which we are obliged to set to every science.

This occasions us to treat often of a species when we cannot treat of everything which belongs to the genus: as we treat of a circle in common geometry without saying anything in detail of the curved line which is its genus, which we are satisfied with simply defining.

Neither can we explain, in relation to a genus, everything which might be said of it, since this would often be too long; but it is enough that we say of it all that we intend to say before passing to its species.

But I believe that a science cannot be treated perfectly, except great attention be paid to these two last rules, as well as to the others, and that we should consent to dispense with them only on necessity, or to secure some great advantage.

CHAPTER XII.

OF WHAT WE KNOW THROUGH FAITH, WHETHER HUMAN OR DIVINE.

All that we have said hitherto relates to sciences purely human, and to knowledges which are founded on the evidence of reason. But before finishing, it is right to speak of another kind of knowledge, which is often not less certain or less evident in its manner,—that, to wit, which we derive from *authority*.

For there are two general ways which lead us to believe that a thing is true: The first is, the knowledge which we have of it ourselves, from having known and sought out its truth, whether by our senses or by our reason. This may be called, generally, *reason*, since the senses themselves depend on the judgment of reason,—or *science*, taking that term more generally than it is taken in the schools, for all the knowledge of an object derived from the object itself.

The other way is, the authority of persons worthy of credence, who assure us that such a thing is, although we ourselves know nothing about it. This is called *faith* or credence, according to the expression of St Augustine—*Quod scimus debemus rationi; quod credimus auctoritati.*

But as this authority may be of two kinds—of God, or of men,—there are also two kinds of faith—*divine* and *human*.

Divine faith cannot be exposed to error, since God can neither deceive nor be deceived.

Human faith is of itself subject to error, since every man is a liar according to the Scripture, and it is possible that he who assures us that a thing is true may be himself deceived. Nevertheless, as we have indicated already, there are things which we know only through human faith, of which we are as certainly and indubitably assured as though we had received mathematical demonstrations of

them: as what we know through the continued relation of so many persons, that it is morally impossible, that they could have conspired together to maintain the same thing, if it had not been true. For example, men have considerable difficulty, naturally, in conceiving that the antipodes exist: nevertheless, though we have never been there, and know nothing of them save through human faith, he would be a fool who did not believe in them. In the same way, he must have lost his senses who could doubt whether Cæsar, Pompey, Cicero, Virgil, ever existed, and whether they were not fictitious personages, like those of Amadis.

It is true that it is often very difficult to mark precisely when human faith has reached this certainty, and when it has not. And this leads men to fall into two opposite errors: the one, that of those who believe too readily, on the slightest rumour; and the other, of those who foolishly oppose the whole force of their mind against the belief of the best attested things, when these offend their prejudices. We may, however, mark certain limits which must be passed in order to secure this human certainty, and others beyond which it is certainly possessed,—leaving a mean between these two kinds of limits which approaches more to certainty or uncertainty, according as it comes nearer to the one or to the other.

And if we compare together the two general ways which lead us to believe a thing—reason and faith—it is certain that faith always supposes some reason. For, as St Augustine says, in his 122d letter, and in many other places, we could never have been led to believe that which is above our reason, if reason itself had not persuaded us that there are things which we do well to believe, though we are unable as yet to comprehend them. This is principally true in relation to divine faith, because true reason teaches us that God, being truth itself, cannot deceive in that which he reveals to us of his nature and his mysteries: from which it appears, that though we are obliged to bring our understanding into captivity to the obedience of Jesus Christ, as St Paul says, we nevertheless do not do this blindly and unreasonably, which is the origin of all false religions, but with the knowledge of the cause; and because it is a reasonable action to bring ourselves thus into

captivity to the authority of God, when he has given us sufficient proofs—such as the miracles, and other extraordinary events—which oblige us to believe that it is himself who has discovered to men the truths which we ought to believe.

In the second place, it is certain that divine faith ought to have more weight with us than our own reason, because reason itself shows us that we ought always to prefer that which is more certain to that which is less, and because that is more certain which God says is true, than that of which our reason persuades us, and because it is more possible for our reason to be deceived than for God to deceive us.

Nevertheless, if we consider things with minute attention, we shall find, that what we evidently see, either by reason, or by the faithful report of the senses, is never opposed to what divine faith teaches us; but that what leads us to imagine this is, that we do not observe the point where the evidence of our reason and senses must terminate. For example, our senses show us clearly, in the Eucharist, the roundness and the whiteness [of the wafer]; but our senses do not inform us whether it is the substance of bread which causes our eyes to perceive the roundness and the whiteness: and thus faith is not contrary to the evidence of our senses, when it tells us that it is not the substance of bread any longer, having been changed to the body of Jesus Christ by the mystery of transubstantiation, and that we only now see the images and appearances of bread which remain, although the substance is no longer there.

Reason, indeed, shows us that the same body cannot be at the same time in different places, nor two bodies in the same place; but this ought to be understood of the natural condition of bodies, because it would be a want of reason to imagine that our mind, being finite, is able to comprehend the extent of the power of God, which is infinite: and thus, when the heretics, in order to destroy the mysteries of faith, as the Trinity, the Incarnation, and the Eucharist, oppose to them these pretended impossibilities derived from reason, they manifestly, in this very act, separate themselves from reason, by pretending that

they are able to comprehend, by their mind, the infinite extent of the power of God. It is sufficient, however, to say, in reply to all these objections, what St Augustine said, on the same subject, of the penetration of bodies:—*Sed nova sunt, sed insolita sunt, sed contra naturæ cursum notissimum sunt, quia magna, quia mira, quia divina, et eo magis vera, certa, firma.*

CHAPTER XIII.

SOME RULES FOR THE RIGHT DIRECTION OF REASON IN THE BELIEF OF THINGS WHICH DEPEND ON HUMAN TESTIMONY.

THE most common use of good sense, and of that power of the soul which enables us to discriminate truth from falsehood, is not in the speculative sciences, to which so few are obliged to devote themselves; but there is scarcely any occasion on which we more frequently employ it, and on which it is more necessary, than in the judgments which we form about every-day affairs.

I do not speak of the judgment which we form as to whether an action is good or bad, worthy of praise or of blame, since it belongs to morality to regulate this, but simply that which we make touching the truth or falsehood of human events, which alone is regarded by logic: whether we consider them as past, as when we seek to know whether we ought to believe them or not; or whether we consider them as future, as when we dread or desire that they will happen, which regulates our hopes and fears.

Some reflections may be made on this subject, which, perhaps, may not be without their use, and which may at least help us to avoid the faults into which many fall, from not having sufficiently regarded the rules of reasoning.

The first reflection is, that a wide difference must be made between two kinds of truths: one, which relates simply to the nature of things, and their unchangeable essence, independently of their existence; the others, which relate to things existing, and especially to human accidents and events, which may or may not be, when we inquire about the future, but which cannot be otherwise, when we inquire about the past. All this is to be understood in relation to their proximate causes, apart from their order immutable in the providence of God,—since, on the one hand, this does not prevent contingency, and, on the other, being unknown, it cannot at all contribute to our belief of things.

In the first kind of truths, since everything is necessary, nothing is true which is not true universally; and thus we may conclude that a thing is false, if it is false in a single case.

But if we think of following the same rules in the belief of human events, we shall always, except by accident, judge falsely, and make a thousand false reasonings about them.

For these events being contingent in their nature, it would be ridiculous to seek in them necessary truth: thus a man would be altogether unreasonable who should believe nothing, except we were to prove to him that it was absolutely necessary that the thing should have happened in that way.

And he would be no less unreasonable who should endeavour to make us believe anything—as, for instance, that the king of China was converted to the christian religion—for this reason alone, that it was not impossible; for another who should assert the contrary might employ the very same reason, and it is clear, therefore, that this could not determine us to believe one rather than the other.

It must, therefore, be laid down as a certain and indubitable maxim on this subject, that the simple possibility of an event is no sufficient reason for our belief of it,—and that we may also have reason to believe it, although we do not judge it to be impossible for the contrary to have happened; so that, of two events, I may have ground for believing the one, and disbelieving the other, although I believe both possible.

But what, then, shall determine me to believe the one rather than the other, if I judge both possible? It will be according to the following maxim:—

In order for me to judge of the truth of an event, and for me to believe it or not to believe it, it is not necessary to consider it abstractly, and in itself, as we should consider a proposition in geometry, but it is necessary to pay attention to all the circumstances which accompany it, internal as well as external. I call *internal* circumstances those which belong to the fact itself, and *external*, those which belong to the persons by whose testimony we are led to believe it. This being done, if all the circumstances are such, that it never or rarely happens that the like circumstances are the concomitants of falsehood, our mind is led, naturally, to believe that it is true; and it is right to do so, especially in the conduct of life, which does not demand greater certainty, and which must often rest satisfied in many circumstances with the greatest probability.

And if, on the contrary, these circumstances are such as we very often find in connection with falsehood, reason determines, either that we remain in suspense, or that we consider as false what has been told us, when there is no appearance of its being true, although it may not be an utter impossibility.

It is asked, for example, whether the history of the baptism of Constantine by St Sylvester is true or false. Baronius believes it to be true; Cardinal Perron, Bishop Spondanus, Father Petavius, Father Morinus, and the most able portion of the church, believe it to be false. If we confine ourselves to its simple impossibility, we have no right to reject it, for it contains nothing absolutely impossible; and it is possible, indeed, speaking absolutely, that Eusebius, who testifies to the contrary, lied in order to favour the Arians, and that the fathers who followed were deceived by his testimony; but if the rule be employed which we have established, which is, to consider what are the circumstances of the one or the other, and which of these have the most marks of truth, we shall find that they are those of the last; for, on the one hand, we cannot rely on the testimony of such a fabulous writer as the author of

the acts of St Sylvester, who is the only ancient authority we have for the baptism of Constantine at Rome; and, on the other, it is not at all probable that a man so able as Eusebius would have ventured to utter a falsehood in relating a thing so celebrated as the baptism of the first emperor who had given liberty to the church, and which would have been known to all the world when he wrote, since this was only four or five years after the death of that emperor.

There is, nevertheless, an exception to this rule, in which we ought to be contented with possibility and probability. This is, when a fact, which is otherwise sufficiently attested, is opposed by the disagreements and apparently conflicting statements of other histories; for in this case it is sufficient that the explanations which we give of these contrarieties be possible and probable; and we should act against reason were we to demand positive proofs of it, because the fact itself being sufficiently proved, it is not just to require that all its circumstances be proved in the same way, otherwise we might doubt a thousand well-established histories, which we cannot reconcile with others which are not less so, except by conjectures which it is impossible to prove positively.

We cannot, for example, reconcile what is related in the books of the Kings, and in those of the Chronicles, of the years of the reigns of the different kings of Judah and Israel, except by giving to some of these kings two commencements of their reign—the one during the life, and the other after the death, of their fathers; and if it is asked what proof we have that such a king reigned some time with his father, it must be confessed that we have no positive proof of this, but it is enough that it is a very possible thing, and that it often happened on other occasions, to justify us in supposing it as a circumstance to reconcile histories otherwise very true.

Hence, there is nothing more absurd than the efforts which have been made by some heretics, in this last age, to prove that St Peter was never at Rome. They cannot deny that this truth is attested by all ecclesiastical authors, and even the most ancient—as Papias, St Dennis of Corinth, Caius, St Irenæus, Tertullian—without being able to

find any who have denied it; and they imagine, nevertheless, that they can destroy it by conjectures—as, for example, that St Paul has not mentioned St Peter in his epistles written from Rome. We may reply to them that St Peter might have been then away from Rome, because it is not maintained that he was so settled there but that he might often leave it to go and preach the gospel in other places. They reply that this is utterly without proof. This is irrelevant, because the fact which they dispute being one of the most assured truths of ecclesiastical history, it is for those who dispute it to show that it is contrary to the Scripture, and it is for those who maintain it to resolve these pretended contrarieties as we do those of Scripture itself, in which we have shown that the possibility suffices.

CHAPTER XIV.

APPLICATION OF THE PRECEDING RULE TO THE BELIEF OF MIRACLES.

The rule which has been explained is, without doubt, very important for the right direction of reason in the belief of particular facts; and it must be observed that, in relation to these, we are in danger of falling into the dangerous extremes of credulity and scepticism.

There are some, for example, who make it a point of conscience to question no miracle, because they think they would be obliged to question all if they question any, and they persuade themselves that it is enough for them to know that everything is possible with God, to believe everything which is told them as the effects of his omnipotence.

Others, on the contrary, foolishly imagine that strength of mind is displayed in doubting of all miracles, without having any other reason for doing so, except that some are

often reported which are not found true, and that they have no more reason to believe the one than the other.

The disposition of the former is much better than that of the latter; but it is true, nevertheless, that the reasoning of both is equally bad.

Both parties fall back on common places. The first rest on the power and goodness of God, on certain miracles which they bring to prove those which are doubtful, and on the blindness of the libertines, who will believe nothing but what is proportionate to their reason. All this is very good in itself, but very feeble when adduced to persuade us of any miracle in particular, since God does not do all that he is able to do; it is no argument that a miracle happened from what had happened like it on other occasions, and we may be very well disposed to believe what is above reason, without being obliged to believe all that men choose to relate to us as being above reason.

The last rest on common places of another kind. "Truth," says one of them, "and error are alike in countenances, carriage, style, and demeanour—we regard them with the same eye. I have seen the birth of many miracles in my time. Though they were strangled in their birth, we may yet foresee the train which they would have had if they had lived to manhood; for it is only to find the end of the thread, and, wander as far as we may, it is much farther from nothing to the smallest thing in the world than from it to the greatest. Now the first who were deluded at the commencement of the extravagance, when they came to spread their story, discovered, by the opposition which they met with, where the difficulty of persuasion lay, and supplied, without scruple, what was wanting to produce conviction. Thus particular error first produces public error; and in its course afterwards, public error produces particular error. And thus, also, this fabric of falsehood is built up in such a way, that the most distant witness understands the matter better than he who is near, and the last informed is more thoroughly convinced than the first."

This discourse is ingenious, and may be useful to restrain us from being carried away with all kinds of rumours. But it would be extravagant to conclude generally from it

that we ought to suspect all that is said of miracles. For it is plain that it relates rather to what we know only through vulgar rumours, without inquiring into their origin; and, it must be confessed that we have no good ground to be assured of what we know only in this way.

But who does not see that we may make also a common place opposed to this which would be, at least, as well founded? For as there are some miracles which may be found to have little truth, if we remount to their source, there are also others which are destroyed in the memory of men, or which find little credit in their mind, because they will not take the trouble to inform themselves of them. Our mind is not subject to one kind of malady alone, it is exposed to different and conflicting kinds; there is a foolish simplicity which believes things the least credible; but there is also a foolish presumption which condemns, as false, everything which passes beyond the narrow limits of the mind. We have often curiosity about trifles and none about important things. False histories flourish everywhere, and the most faithful have no circulation.

Few people know the miracle which happened in our time at Faremoutier, in the person of a nun so blind that the form of her eye scarcely remained, who recovered her sight in a moment by touching the relics of St Fara, as I know from the person who saw her both before and after.

St Augustine says that there were in his time many miracles most certain, which were known to few people, and which, although very remarkable and astonishing, did not pass from one end of the city to the other. This led him to describe and relate before the people those which he had found true; and he remarks in the Twenty-second Book of the City of God, that there happened, in the single city of Hippo, near seventy, within two years after the building of a chapel in honour of St Stephen, besides many others which he had not described, which he testifies, nevertheless, to have been certainly known.

We see, therefore, clearly, that there is nothing less reasonable than to guide ourselves by common places in relation to these occurrences, whether in accepting all miracles, or rejecting all, but that it is necessary to examine

their particular circumstances, and the faithfulness and knowledge of the witnesses who relate them.

Piety does not oblige a man of good sense to believe all the miracles related in the Golden Legend, or in [Simeon] Metaphrastes, since these authors are full of so many fables that we have no ground to be assured of anything on their testimony alone, as Cardinal Bellarmin has readily confessed of the latter.

But I maintain that every man of good sense, though he has no piety, ought to receive, as true, the miracles which St Augustine relates in his Confessions, and in the City of God, as having happened before his eyes, or of which he testifies himself to have had most minute information from the persons themselves to whom these things had happened—as, for example, of a blind person cured at Milan, in the presence of all the people, by touching the relics of St Gervais and St Protais, and of which he says, in the Twenty-second Book of the City of God, chap. 8,—"*Miraculum quod Mediolani factum est cùm illic essemus, quando illuminatus est cæcus, ad multorum notitiam potuit pervenire; quia et grandis est civitas, et ibi erat tunc imperator, et immenso populo teste, res gesta est, concurrente ad corpora martyrum Gervasii et Protasii.*"

Of a woman cured in Africa by flowers which had touched the relics of St Stephen, as he testifies in the same place.

Of a lady of quality cured of a cancer (which had been pronounced incurable) by the sign of the cross, which had been made on it by one newly baptised, according to the revelation which she had had.

Of an infant, who had died without baptism, being restored to life by the prayers which his mother had presented to St Stephen, saying to him with a strong faith,—*Holy martyr, restore to me my son. Thou knowest that I only ask his life, in order that he may not be for ever separated from God.* That saint relates this as a thing of which he was quite assured, in a sermon which he preached to his people on the subject of another very remarkable miracle which had happened in the church at the very time in which he was preaching, which he describes at length in that part of the City of God.

He says that seven brothers and three sisters, of an honourable family of Cesarea in Cappadocia, having been cursed by their mother for an injury which they had done her, God punished them with a disease through which they were continually, even in sleep, agitated by fearful trembling all over the body, which was so deformed, that, not being able to endure the sight of those who knew them, they had all left their own country to go in different directions, and that thus one of the brothers, called Paul, and one of the sisters, called Palladia, had come to Hippo, and, being noticed by all the city, the cause of their misfortune had been learnt from them; that, the day before Easter, the brother, praying to God before the gates of the chapel of St Stephen, fell all at once into a stupor, during which it was observed that he trembled no longer, and being, when he awoke, perfectly well, there arose in the church a great shout from the people, who praised God for that miracle, and who ran to St Augustine (who was preparing to say mass), to tell him what had happened.

"After," says he, "the cries of rejoicing were over, and the holy scripture had been read, I said little to them on the festival and on this great subject of rejoicing, because I wished rather to leave them, not to hear, but to contemplate the eloquence of God in that divine work. I then led away with me the brother who had been cured; I made him recount all his history; I compelled him to write it; and on the morrow I promised the people that I would cause him to relate it the day after. Thus, the third day after Easter, having placed the brother and the sister on the step of the rood loft, in order that the people might see in the sister, who still had that fearful trembling, the malady from which the brother had been delivered by the goodness of God, I made him read the story of their history before the people, and let them go. I then began to preach on this subject (the sermon which is the 323d), and all at once, while I was still speaking, a great cry of joy arose from the side of the chapel, and the sister was brought to me, who (having gone from me into an aisle), had been perfectly cured in the same way as her brother, which caused such joy amongst the people that it was scarcely possible to bear the shout which they made."

I wished to relate all the particulars of this miracle, in order to convince the most incredulous that they would be guilty of folly in questioning its truth, as well as that of the many others which this saint relates in the same place. For, supposing the things to have happened which he relates, all reasonable persons must acknowledge the finger of God in them; and thus all that would be left to the incredulous would be to question the testimony of St Augustine himself by imagining that he altered the truth, in order to give authority to the christian religion in the minds of the pagans. Now this cannot be said with the slightest colour of truth.

Firstly, because it is not probable that a wise man would have attempted to lie about things so public, in which he would have been convicted of falsehood by a multitude of witnesses, which would have brought disgrace on the christian religion. Secondly, because there never was any one a greater enemy to falsehood than this saint, especially in matters of religion, having established through whole books, not only that it is never permissible to lie, but that it is an awful crime to do so, under the pretext of converting men more easily to the faith thereby.

Hence, it must produce excessive astonishment to see that the heretics of the present time, regarding St Augustine as a very intelligent and sincere man, have not considered the manner in which they speak of the invocation of saints and the veneration of relics as a superstitious worship derived from idolatry, and tending to the ruin of all religion; for it is plain that we take away from him one of his most solid foundations when we take away from true miracles the authority which they ought to have in the confirmation of the truth; and it is clear that the authority of these miracles is utterly destroyed when we say that God works them in return for superstitious and idolatrous worship. Now this is truly what the heretics do, in treating, on the one hand, the reverence which the catholics render to saints and to their relics, as a criminal superstition; and not being able to deny, on the other, that the greatest friends of God, such as was (by their own confession) St Augustine, have assured us that God has cured incurable diseases, opened the eyes of the blind, and re-

stored the dead to life, as a reward for the devotion of those who have invoked the saints and reverenced their relics.

Indeed, this consideration alone ought to lead every man of good sense to acknowledge the falsity of the pretended reformed religion.

I have enlarged somewhat on this celebrated example, of the judgment which we ought to make on the truth of facts, in order that the rule may be employed in similar occurrences, because we fall into the same error in relation to them. Each one thinks that it is enough, in order to decide on them, to make a common place which is often wholly composed of maxims which, so far from being universally true, are often not even probable, when they are joined with the particular circumstances of the facts which we examine. It is necessary to unite these circumstances, and not to separate them, since it often happens that a fact which is scarcely probable in connection with a single circumstance, which is commonly a mark of falsehood, must be reckoned certain in connection with other circumstances, and that, on the contrary, a fact which may appear to us true in connection with a given circumstance which is commonly a mark of truth, ought to be judged false in connection with others, which destroy this, as we shall explain in the following chapter.

CHAPTER XV.

ANOTHER REMARK ON THE SUBJECT OF THE BELIEF OF EVENTS.

THERE is still another very important remark to be made on the belief of events. It is, that amongst the circumstances which we must consider, in order to determine whether we ought to believe them or not, there are some which may be called *common circumstances*, because they

are such as in the greater number of facts are found far more often connected with truth than with falsehood; and then, if these are not counterbalanced by other particular circumstances, which weaken or destroy in our minds the motives of belief derived from these common circumstances, we have reason to believe that these events are, if not certainly true, at least very probably so, which is sufficient when we are obliged to judge of them; for, as we ought to be contented with moral certainty in things which are not susceptible of metaphysical certainty, so, also, when we are not able to obtain complete moral certainty, the best thing we can do, when we are obliged to take some side, is to embrace the most probable, since it would be an outrage on reason to do otherwise.

And if, on the contrary, these common circumstances are found connected with other particular circumstances, which destroy in our mind, as we have said, the motives of belief derived from these common circumstances, either because they are themselves such that the like are very rarely accompanied with falsehood, we have then no longer the same reason to believe that event, but either our mind remains in suspense if the particular circumstances only lessen the weight of the common circumstances, or we are led to believe that the fact is false, if they are such as are commonly the marks of falsehood. The following example may explain this remark.

It is a common circumstance for most deeds to be signed by two notaries, that is to say, by two public persons who have generally great interest in not being guilty of falsehood, inasmuch as they have not only their conscience and their honour, but their fortune and their livelihood, at stake. This consideration alone is sufficient, if we know no other particulars about a contract, to believe that it is not ante-dated, not that it may not have been ante-dated, but because it is certain, that of a thousand contracts there are nine hundred and ninety-nine which are not so; so that it is incomparably more probable that the contract which we suspect, is one of the nine hundred and ninety-nine, than that it is the solitary one among the thousand which may be found ante-dated. That if the probity of the notaries who have signed it is perfectly well

known to me; I may conclude, then, most certainly, that they have not committed a forgery.

But if to this common circumstance of being signed by two notaries, which is a sufficient reason, when it is not opposed by others, for trusting in the date of the contract, other particular circumstances are added, as that these notaries were notorious for being without honour and conscience, and that they might have had considerable interest in that falsification; this, though it may not lead me to conclude that the contract is ante-dated, will, nevertheless, diminish the weight which, without this, the signature of the two notaries would have had on my mind to induce me to believe that it is not so. And if, beyond this, I am able to discover other positive proofs of this ante-dating, either by witnesses, or very strong arguments, —such as would be the inability of a man to lend twenty thousand crowns, from the fact of his not having a hundred when he engaged to do so,—I should then be determined to believe that there was falsity in the contract, and it would then be most unreasonable to attempt to compel me either to believe that the contract was not ante-dated, or to confess that I had been wrong in supposing that others in which I had not seen the same marks of falsity were not so, since they might have been like that one.

We may apply all this to subjects which often give rise to disputes among the doctors. A question arises as to whether a book has been really written by the author whose name it has always borne, or whether the acts of a council are true or suppositious.

It is plain that the presumption is in favour of an author who has for a long time held possession of a work, and of the truth of the acts of a council, which we have always read of, and that the reasons must be considerable which should induce us to believe the contrary, notwithstanding that presumption.

Hence, a very able man of our time, having endeavoured to show that the letter of St Cyprian to Pope Stephen on the subject of Martin, bishop of Arles, was not written by that holy martyr, has not been able to convince the learned, his conjectures not having appeared strong enough to take away from St Cyprian the piece which has always borne

his name, which perfectly resembles in style his other works.

It is in vain, also, that Blondel and Saumaisius, not being able to reply to the argument derived from the letters of St Ignatius for the superiority of the bishop over the priests from the commencement of the church, have endeavoured to maintain that all these letters are suppositious, as they have even been printed by Isaac Vossius and Usserius from an ancient Greek manuscript in the library of Florence, and they have been refuted by those even of their own party, since, avowing as they do, that we have the very letters which were cited by Eusebius, by St Jerome, by Theodoret and Origen, there is no likelihood of the letters of St Ignatius having been received by St Polycarp, that these true letters should have disappeared, and false ones have supplied their places in the time which elapsed between St Polycarp and Origen, or Eusebius; besides which, these letters of St Ignatius which we now have, have a certain character of holiness and simplicity so in harmony with those apostolic times, that they vindicate themselves against all these vain accusations of fabrication and falsehood.

Again, all the difficulties which Cardinal Perron has proposed against the letter of the council of Africa, touching the appellations of the holy see, have not prevented any from believing now, as formerly, that it was truly written by that council.

But there are, nevertheless, other occasions on which the particular reasons avail against that general reason of long possession.

Thus, although the letter of St Clement to St James, bishop of Jerusalem, was translated by Ruffinus, nearly thirteen centuries ago, and was alleged to have been written by St Clement by a council of France, more than twelve centuries ago, it is difficult to avoid the conclusion that it is suppositious, since that holy bishop of Jerusalem having suffered martyrdom before St Peter, it is difficult that St Clement could have written to him [illegible] of St Peter, as that letter supposes.

So, again, though the Commentaries attributed to St Ambrose, were quoted [illegible]

vast number of authors, and the imperfect work on St Matthew under that of St Chrysostom; every one, nevertheless, is convinced now that they were not by these saints, but by other ancient authors, involved in many errors.

Finally, the acts which we have of the council of Sinnessa, under Marcellinus, of the two or three of Rome, under St Sylvester, and of another at Rome, under Sextus the Third, would be sufficient to convince us of the reality of these councils if they contained nothing but what was probable and in harmony with the time at which they were said to have been held; but they contain so much that is unreasonable, that does not agree with those times, that the probability of their being false and suppositious is great.

Such are some of the remarks which may be made in relation to these kinds of judgments; but it must not be imagined that they will avail to preserve us always from being deceived. All that they can do, at most, is to enable us to avoid the more obvious errors, and to accustom the mind not to allow itself to be carried away by common places, which, while embodying some general truth, are, nevertheless, false on many particular occasions, which is one of the most considerable sources of the errors of men.

CHAPTER XVI.

OF THE JUDGMENT WHICH WE SHOULD MAKE TOUCHING FUTURE EVENTS.

[redacted]rules which are employed in judging of past events [redacted]ily be applied to those which are future; for, as [redacted] to believe that an event has probably happened [redacted]ircumstances are certain, which we know are [redacted]nected with that event, we ought also to be- [redacted]bably will happen when the present cir- [redacted]h as are commonly followed by such an [redacted] doctors may judge of the good or

bad termination of diseases—captains of the distant eve of a war—and that we judge, in the world, of the grea part of contingent affairs.

But in relation to events in which we are engaged, a which we may bring about or prevent to some extent b our diligence in seeking or avoiding them, the majorit of people fall into an illusion which is the more deceptive in proportion as it appears to them more reasonable; it is, that they regard only the greatness of the result of the advantage which they hope for, or the disadvantage which they fear, without considering at all the probability which there is of that advantageous or disadvantageous event befalling.

Thus, when they apprehend any great evil, as the loss of their livelihood or their fortune, they think it the part of prudence to neglect no precaution for preserving these; and if it is some great good, as the gain of a hundred thousand crowns, they think they act wisely in seeking to obtain it, if the hazard is a small amount, however little likelihood there may be of success.

It was by a reasoning of this kind that a princess, having heard that some persons had been crushed by the fall of a ceiling, would never afterwards enter into a house without having it previously examined; and she was so persuaded that she acted reasonably in this, that she considered all who acted otherwise imprudent.

It is this reason also, probably, which induces many persons to take such troublesome and unnecessary precautions for the preservation of their health. It is this which renders others distrustful to excess, even in the smallest things, because, having been sometimes deceived, they imagine that they will be so in all other things. It is this which attracts so many to lotteries. Is it not a most advantageous thing, say they, to gain twenty thousand crowns for a single crown? Each believes that is the happy one to whom the prize will fall; and no reflects, that if there be, for example, twenty thous crowns, it will be, perhaps, thirty thousand times probable that each individual will lose them, will gain them.

hat we ought to do in order to obtain a good and to void an evil, it is necessary to consider, not only the ood and evil in itself, but also the probability of its hap- ening and not happening, and to regard geometrically he proportion which all these things have, taken together, which may be illustrated by the following example:—

There are certain games in which ten persons lay down a crown each, and where one only gains the whole, and all the others lose: thus each of the players has only the chance of losing a crown, and of gaining nine by it. If we consider only the gain and loss in themselves, it might appear that all have the advantage of it; but it is necessary to consider, further, that if each may gain nine crowns, and there is only the hazard of losing one, it is also nine times more probable, in relation to each, that he will lose his crown, and not gain the nine. Thus each has for himself nine crowns to hope for, one to lose,—nine degrees of probability of losing a crown, and only one of gaining the nine, which puts the matter on a perfect equality.

All games of this kind are equitable, as far as gain can be, and those which are beyond this proportion are manifestly unjust; and hence we may see that there is manifest injustice in those kinds of games which are called lotteries, because the master of the lottery, taking generally a tenth part of the whole as his perquisite, the whole body of the players is duped, in the same way as if a man should play in an equal game,—that is to say, one in which there is as much probability of gain as of loss—ten pistoles against nine. Now, if this is disadvantageous to all the players, it is also so to each in particular, since it happens hence that the probability of loss is greater than the probability of gain—that the advantage which we hope for does not surpass the disadvantage to which we are exposed, which is that of losing what we laid down.

There is sometimes so little appearance of success in ing, that, however advantageous it may be, and however all the stake for obtaining it, it is well not to hazard it; s it would be folly to play twenty sous against twenty against a kingdom, on the condition that we [illegible] if an infant arranging at hazard

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